

SSD-88-0044-D

**STRATEGIC DEFENSE INITIATIVE (SDI)
SYSTEM ARCHITECTURE AND
KEY TRADEOFF STUDIES**

PHASE IIC

**IDEF₀ FUNCTIONAL DECOMPOSITION FLOWS
APPENDIX D**

**15 MARCH 1988
CONTRACT NO. MDA903-85-C-0065**

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FOREWORD

The Satellite and Space Electronics Division (S&SED) of Rockwell International is pleased to submit this Final Report for Phase IIC of the Strategic Defense Initiative (SDI) System Architecture and Key Tradeoff Studies, in fulfillment of the requirements, as defined in the directed teaming arrangements, of contract MDA903-85-C-0065.

This report presents the results of the Rockwell team's efforts on this contract. These efforts were a continuation of the System Architecture and Key Trade-Off Studies initiated in December 1984, which Rockwell has been a part of since its inception. Rockwell's objectives in these studies have been to refine analysis of previously developed architectures, and to develop and document new architectural variants. This effort resulted in the creation of technical data packages required to support the Defense Acquisition Board I decision and develop the agreed upon baseline architecture documented in the Baseline Concept Description document.

This report is submitted in one volume with eight appendices.

CDRL A009	Final Report
Appendix A	Rockwell SDI ARchitecture Study Document Index
Appendix B	Operations Concept (CDRL B003)
Appendix C	Architecture Evaluation (CDRL B006)
Appendix D	IDEF₀ Functional Decomposition Flows
Appendix E	Congestion Control Subsystem Software Algorithm
Appendix F	Automated Systems Engineering (EPOS)
Appendix G	AERIE System Concept
Appendix H	Manufacturing Assessment

INTRODUCTION

This appendix contains Rockwell's functional decomposition of the Strategic Defense System (SDS). This document contains a detailed decomposition of the basic function "Provide Ballistic Missile Defense" down to a level of detail adequate to make functional allocations to any variation of the architecture described in the Baseline Concept Description (4 August 1987), and in sufficient detail to be used in any strategic, theater or coupled architecture. Of the five top-level Ballistic Missile Defense functions identified—F1, Develop SDS; F2, Produce SDS; F3, Deploy SDS; F4, Employ SDS; and F5, Decommission SDS—only F3 (Deploy SDS) and F4 (Employ SDS) are further decomposed. Because of the emphasis by SDIO on Function 4 (Employ SDS), it was decomposed in greater detail than F3 (Deploy SDS). The decomposition of functions is complete when either a hardware decision must be made, e.g., a functional description of a Cryo-cooler, or the function could be allocated independent of a hardware concept, e.g., Weapons Fire Control function sufficiently defined to allow it to be allocated to the SSTS, SBI-CV or BSTS. In addition to functional descriptions, this document contains a traceable breakout of requirements derived from specific functions as well as the inputs and outputs that make up the functional process. The ability to allocate the functions described in this document to the elements of any architectural concept was a conscious decision by Rockwell. A functional decomposition was desired that was adaptable to any hardware concept, not one that was forced to conform to an existing concept.

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ACRONYMS AND ABBREVIATION

AATPE	Advance Acquisition, Tracking, and Pointing Experiment
ABL	Airborne Laser
ABM	Antiballistic Missile
ACM	Attitude Control Module
ACP	Airborne Command Post
ACS	Attitude Control System
Ada PDL	Ada Process Description Language
ADC	ANALOG to Digital Converter
ADI	Air Defense Initiative
ADIO	ADCOM Intelligence Officer
ADOC	Air Defense Operations Center
ADOP	Advanced Distributed On-Board Processor
ADPE	Automated Data Processing Equipment
AEM	Arsenal Exchange Module
AERIE	Aerial Intercept Element
AFB	Air Force Base
AFS	Air Force Station
AFSC	Air Force Systems Command
AFSPACECOM	Air Force Space Command
AFSTC	Air Force Science Technology Center
AI	Artificial Intelligence
AIAA	American Institute of Aeronautics and Astronautics
AJ	Antijam

ALCC	Airborne Launch Control Center
ALCM	Air-Launched Cruise Missile
ALERTCON	Alert Condition
ALS	Advanced Launch System
AMOS	Air Force Maui Optical Tracking Station
ANMCC	Alternate National Military Command Center
AOA	Airborne Optical Adjunct
AOS	Airborne Optical System
AOSP	Advanced On-Board Signal Processor
APA	Antenna Point and Acquisition
APU	Auxiliary Power Unit
ARTS	Automated Remote Tracking Station
ASAT	Antisatellite
ASDP	Advanced Sensor Demonstration Program
ASM	Air to Surface Missile
ASW	Antisubmarine Warfare
ASWCCS	Antisubmarine Warfare Command and Control System
ASWOC	Antisubmarine Warfare Operations Center
ATCC	Air Traffic Control Center
AVLSI	Advanced Very Large Scale Intergration
AW/AA	Attack Warning/Attack Assessment
AWACC	Airborne Warning and Control Center
AWACS	Airborne Warning and Control System
AWDS	Automated Weather Distribution System
AWPDS	Attack Warning Processing and Display System

BBL	Brassboard Level
BCD	Baseline Concept Definition
BeH ₂	Beryllium Hydride
BER	Bit Error Rate
BIC	Braduskill Interceptor Concept
BIS	Bank of International Settlements
BM	Battle Manager
BMC-3	Battle Management/Command, Control, and Communications
BMD	Ballistic Missile Defense
BMDOC	Ballistic Missile Defense Operations Center
BMEWS	Ballistic Missile Early Warning System
BP	Boost Phase
BPA	Budget Plan Authority
B/PBTBM	Boost/Post Boost Tier Battle Manager
BQ	Beam Quality
BRDF	Bidirectional Reflectance Distribution Function
BSTS	Boost Surveillance and Tracking System
C ²	Command and Control
C ³	Command, Control, and Communications
C ³ 1	Command, Control, Communications and Intelligence
CC	Carbon-Carbon
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CELV	Complementary Expendable Launch Vehicle
CEP	Circular Error Probability

CER	Cost Estimating Relationship
CETD	Concept Experiment Test and Development
CHOP	Change in Operational Procedures
CINC	Commander-in-Chief
CINCSD	Commander-in-Chief Strategic Defense
CINCSPACE	Commander-in-Chief U.S. Space Command
CJCS	Commander Joint Chiefs of Staff
ClF5	Chlorine Pentafluoride
CM	Countermeasure
CMBA	Cheyenne Mountain Complex
CMEA	Council for Mutual Economics Assistance
CMOS	Complementary Metal Oxide Semiconductor
CO ₂	Carbon Dioxide
COBRA DANE	Shemya, AK Tracking Radar System
COMSAT	Communication Satellite
COMSEC	Communication Security
CONSU	Continental Soviet Union
CORA	Coherent Optical Radar Amplifier Program
CP	Command Post
CPC	Coherent Power Combiner
CPI	Consumer Price Index
CPSU	Communist Party of the Soviet Union
CSOC	Consolidated Space Operations Center
CSO	Closely Spaced Objects
CV	Carrier Vehicle
CW	Continuous Wave

DAA	Direct Ascent ASAT
DAB	Defense Acquisition Board
DABM	Defense Against Ballistic Missiles
DANA	Direct Ascent Nuclear ASAT
DANNKA	Direct Ascent Nonuclear Kill ASAT
DARPA	Defense Advanced Research Project Agency
DASAT	Direct-Ascent Antisatellites
DD&T	Design, Development, and Test
DE	Damage Expectancy
DEFCON	Defense Condition (JCS)
Dem/Val	Demonstration/Validation
DEW	Directed Energy Weapon
DEW	Distant Early Warning
DF	Deuterium Fluoride
DIA	Defense Intelligence Agency
DIDS	Dynamic Interdiction Discrimination System
DMP	Defense Machinery Production
DMS	Data Management System
DMSP	Defense Meteorological Satellite Program (METSAT)
DOD	Department of Defense
DSAT	Defense Satellite
DCS	Defense Satellite Communications System
DSP	Defense Support Program
DST	Defense Suppression Threat
DT&E	Development, Test and Evaluation

DT&V	Development, Test, and Validation
DYSC	Dynamic Spherical Coordinate
EAM	Emergency Action Message
ECC	Emergency Command Cell
ECCM	Electronic Counter-Countermeasures
ECL	Emitter Coupled Logic
ECM	Electronic Countermeasure
ECMC	Enhanced Crisis Management Capability
ECS	Environmental Control System
EDAC	Error Detection and Correction
EKF	Extended Kalman Filter
EM	Electromagnetic
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interface
EML	Electromagnetic Launcher
EMP	Electromagnetic Pulse
EMRLD	Eximer Moderate Power Raman-Shifted Laser Device
EMSSP	Electromagnetic Standards and Specification Program
ENDO	Endoatmosphere
EOCM	Electro-Optic Countermeasure
EPOS	Engineering and Project Management Oriented Support System
EPS	Electric Power System
ERCS	Emergency Rocket Communication System
ERINT	Emergency Reentry Interceptor
ERIS	Exoatmospheric Reentry Interceptor Subsystem or System

ETEEM	End-To-End Engineering Model
EW	Electronic Warfare
EWR	Early Warning Radar
FBB	Fast Burn Booster
F/C	Fire Control
FCDL	Fire Control Data Link
FDA	Final Documentation and Analysis
FEL	Free Electron Laser
FLAGE	Flexible Lightweight Agile Guided Experiment
FO	Follow-On
FOB	Fractional Orbital Bombardment System
FOC	Full Operational Capability
FOG	Fiber Optics Gyro
FOR	Field of Regard
FORCECOM	U.S. Force Command
FOT&E	Follow-On Operational Tests and Evaluation
FOV	Field of View
FPA	Focal Plane Array
FSD	Full Scale Development
FSED	Full Scale Engineering Development
FT	Fault Tolerance
FTD	Foreign Technology Division
FY	Fiscal Year
FYP	Five Year Plan (Soviet)

G&C	Guidance & Control
GA/IRT	Ground/Air Interface Terminal
GATT	General Agreement on Trade and Tariff
GBL	Ground-Based Laser
GBLRS	Ground-Based Laser Repeater Station
GBLU	Ground-Based Laser Uplink
GBOS	Ground-Based Optical System
GBPS	Giga Bits Per Second
GBPST	Ground-Based Passive Signal Tracking
GBR	Ground-Based Radar
GDR	German Democratic Republic
GEO	Geosynchronous Orbit
GEODSS	Ground-Based Electro-Optical Deep Space Surveillance System
GHz	Gigahertz
GLCM	Ground-Launched Cruise Missile
GLOW	Gross Liftoff Weight
GMCP	Ground Mobile Command Post
GNP	Gross National Product
GOPS	Giga (billion) Operations Per Second
GRPS	Giga Pluses per Second
GPS	Global Positioning System
GSE	Ground Support Equipment
GSTS	Ground Surveillance and Tracking System
GVSC	Generic VHSC Spaceborne Computer
GW	Gigawatts
GaAs	Gallium Arsenide

HA	Higher Authority
HW	Hardware
HEDI	High Endoatmospheric Defense Interceptor
HEDS	High Endoatmospheric Defense System
HEMT	High Electron Mobility Transistor
HF	Hydrogen Fluoride
HIBREL	High Brightness Relay
HICAMP	Highly Calibrated Airborne Measurement Program
HIP Be	Hot-Isostatic Press Beryllium
HLG	Hemispherical Laser Gyro
HLV	Heavy Lift Launch Vehicle
HLV	Heavy Lift Vehicle
HOL	High Order Language
HSU	High-Speed Search Unit
HTK	Hard Target Kill
HYVINT	Hyper-Velocity Interceptor
I&W	Indications and Warnings
IAW	In Accordance With
ICBM	Intercontinental Ballistic Missile
ICT	Intelligence Cycle Time
ID	Identification
IDHS	Intelligence Data Handling System
ILDC	Integrated Logic Design Concepts
IMF	International Monetary Fund

IMU	Inertial Measurement Unit
INF	Intermediate Nuclear Forces
IOC	Initial Operating Capability
IPP	Impact Point Prediction
IR	Infrared
IR&D	Internal Research and Development
IRBM	Intermediate Range Ballistic Missile
ISP	Specific Impulse
ITUE	Integrated Test Uplinks Experiment
ITW&A	Integrated Tactical Warning and Assessment
IUS	Inertial Upper Stage
JCS	Joint Chiefs of Staff [also nuclear hardness level specification (i.e., JCS XXX)]
JSS	Joint Surveillance System
JSTPS	Joint Strategic Target Planning Staff
KA	Kill Assessment
KBPS	Kilo Bits Per Second
KED	Kill Enhancement Device
KEW	Kinetic Energy Weapon
kg	Kilogram
KKV	Kinetic Kill Vehicle
KREMS	Kiernan Re-Entry Measurement Site
KSC	Kennedy Space Center
KT	Kilo Ton
KV	Kill Vehicle

KW	Kilo Watts
LADAR	Laser Radar
LANTFLEET	Atlantic Fleet
LAU	Launch
LCC	Life Cycle Cost
LDC	Less-Developed Country
LDR	Leadership
LEO	Low Earth Orbit
LICD	Laser Imaging Component Development
LMF	Large Mirror Facility
LPARDS	Large Phase Array Radar Detection System
LPP	Launch Point Prediction
LRB	Liquid Rocket Booster
LRU	Line Replacement Unit
LUA	Launch-Under-Attack
LWIR	Long Wavelength Infrared
M1	Basic Money Supply
MAC	Military Airlift Command
MANTECH	Manufacturing Technology
MaRV	Maneuvering Reentry Vehicle
MBMW	Machine Building and Metal Working
MBPS	Mega Bits per Second
MC	Midcourse Phase
MCCC	Mission Control Center (Satellite)

MCP	Mobile Command Post
MDP	Mission Data Processing
METSAT	Meteorological Satellite
MFC	Matched Filter Correlator
MILSTAR	Military Extremely High Frequency (EHF) Satellite Communications System
MIPS	Million Instructions Per Second
MIRV	Multiple Independently Targeted Reentry Vehicles
MIS	Missile
MLC	Mobile Liaison Cell
MMH	Monomethylhydrazine
MW	Millimeter Wave
MOA	Memorandum Of Agreement
MOE	Measure of Effectiveness
MOM	Measure of Merit
MOPA	Master Oscillator Power Amplifier
MOPS	Million Operations Per Second
MOTR	Multiple Object Tracking Radar
MOU	Memorandum Of Understanding
MRP	Multiple Reentry Payload
MRPKV	MRP Kinetic Kill Vehicle
MS	Milestone
MISC	Missile and Space Intelligence Center
MSLOC	Millions of Source Lines Of Code
MSSTM	Military Space System Technology Model
MUX	Multiplex
MW	Megawatts

MWC	Missile Warning Center
MWDS	Missile Warning and Display System
MWIR	Mid-Wavelength Infrared
N₂H₄	Hydrazine
N₂O₄	Nitrogen Tetroxide
NASA	National Aeronautics and Space Administration
NASP	National Aerospace Plane
NATO	North Atlantic Treaty Organization
NAVSPASUR	Naval Space Surveillance System
NCA	National Command Authority
NCCS	Navy Command and Control System
NDEW	Nuclear Directed Energy Weapon
NDS	Nuclear Detection System (formerly IONDS)
NEACP	National Emergency Airborne Command Post
NEP	National Economic Plan
NIO	National Intelligence Officer
NKEW	Nuclear Kinetic Energy Weapon
NM	Network Manager
NMCC	National Military Command Center
NMCS	National Military Command System
NMP	Net Material Product
NOP	Nuclear Operations Plan (NATO)
NORAD	North American Aerospace Defense Command
NPB	Neutral Particle Beam
NPES	Nuclear Planning and Execution System

NTF/NTB	National Test Facility/National Test Bed
O&M	Operations & Maintenance
O&S	Operations and Support
OA	Oscillator Amplifier
OAI	Oscillator Amplifier Integration
OAMP	Optical Airborne Measurement Program
OB	Order of Battle
OBP/NM	On-Board Processor for Network Manager
OFVR	Out-of-Field-of-View Rejection
OIS	Orbit Insertion System
OMT	Other Military Targets
OMV	Orbital Maneuvering Vehicle
OSD	Office of the Secretary of Defense
OSIS	Ocean Surveillance Information System
OT&E	Operational Test and Evaluation
OTH	Over-The-Horizon
OTH-B	Over-the-Horizon Backscatter Radar
PACCS	Post-Attack Command Control System
PARCS	Perimeter Acquisition Radar System
PATHS	Precursor Above-The-Horizon Sensor
PAVE PAWS	SLBM Early Warning System
PAXBAR	Pacific Radar Barrier
PB	Post-Boost Phase
PBALL	Precision Ballistics

PBV	Postboost Vehicle
PDR	Preliminary Design Review
PINS	Point In Space
PK	Probability of Kill
POS	Positioner Stage
PSI	Platinum Silicon
PVHgCdTe	Photovoltaic Mercury Cadmium Telluride
R ³	Rotary Reciprocating Refrigerator
R&D	Research and Development
RAD	Radiation Absorbed Dose
RAM	Radar Absorption Material
RAM	Random Access Memory
RDT&E	Research Development Test and Evaluation
RECCE	Reconnaissance
REM	Radiation Equivalent Man
RF	Radio Frequency
RFW	Radar Frequency Weapon
RID	Range Insensitive Direction
RLG	Ring Laser Gyro
RMA	Reliability / Maintainability/Availability
ROCC	Regional Operations Control Center
ROE	Rule Of Engagement
ROFT	Rapid Optic Fabrication Technology
ROM	Read-Only Memory
RU	Rubles

RV	Reentry Vehicle
RVF	RV Finder
RVFINDER	Reentry Vehicle Flash Identification and Discrimination Evaluation Research
S & SED	Satellite & Space Electronics Division, Rockwell International
SAC	Strategic Air Command
SACC	Sector Antisubmarine Control Center
SACDIN	Strategic Air Command Digital Information Network
SADMT	SDI Architecture Dataflow Modeling Technique
SALT	Strategic Arms Limitation Treaty
SAM	Surface-to-Air Missile
SAMTO	Space and Missile Test Organization
SATKA	Surveillance Acquisition, Tracking, and Kill Assessment
SBFEL	Space-Based Free-Electron Laser
SBI	Space-Based Interceptor
SBL	Space-Based Laser
SBSP	Space-Based Support Platform
SCF	Satellite Control Facility
SCIS	Survivable Communications Integration System
SCN	Space Communications Network
SCP	System Concept Paper
SDI	Strategic Defense Initiative
SDIO	Strategic Defense Initiative Organization
SDLV	Shuttle-Derived Launch Vehicle
SDR	System Design Review
SDS	Strategic Defense System

SDS-CC	Strategic Defense System Command Center
SDS-OC	Strategic Defense System Operations Center
SECC	Survivable and Enduring Command Center (SAC)
SEER	Sensor Experimental Evaluation and Review
SEO	Survivability Enhancement Option
SEWS	Satellite Early Warning System
SHAPE	Supreme Headquarters Allied Power Europe (NATO)
SHF	Super High Frequency
SIE	SATKA Integrated Experiment
SIOP	Single Integrated Operational Plan
SIOP CINC	U&S Commander with Forces Committed to the SIOP
SIT	Spacecraft Integration and Test
SITREP	Situation Report
SLBM	Submarine Launched Ballistic Missile
SLC	Space Launch Complex
SLCM	Sea-Launched Cruise Missile
SLOC	Source Lines of Code
SMAFH	Satellite Material Hardening (standardized)
SNF	Strategic Nuclear Forces
SOA	State Of Art
SOC	Satellite Operations Center/Sector Operations Center
SOCCC	Satellite Operations Center/Submarine Operational Control Center
SOF	Strategic Offensive Forces
SOSUS	Sound Surveillance System
SOVA	Soviet Analysis
SPACETRACK	AF Satellite Surveillance Network

SPADCCS	Space Defense Command and Control Center
SPADOC	Space Defense Operations Center
SPETSNAZ	Covert Soviet Special Forces
SPOC	Space Operations Center
SPR	Spares
SQM	Space-Qualified Model
SRAM	Short-Range Attack Missile
SRB	Solid Rocket Booster
SSBN	Ballistic Missile Nuclear-Energy Submarine
SSC	Space Surveillance Center
SSGN	Cruise Missile Nuclear-Energy Submarine
SSME	Space Shuttle Main Engine
SSN	Space Surveillance Network
SSP	Small Sortie Payload
SSP	Solid State Photomultiplier
SSTS	Space Surveillance & Tracking System
STAR	System Threat Assessment Report
STAS	Space Transportation Architecture Study
STP	Space Test Program
STR	Strategic Forces
STS	Space Transportation System
SU	Soviet Union
SURTASS	Surface Tower Array Surveillance System
SV	State Vector
SVEC	Surveillance, Vulnerability, Endurability and Connectivity
SW	Software

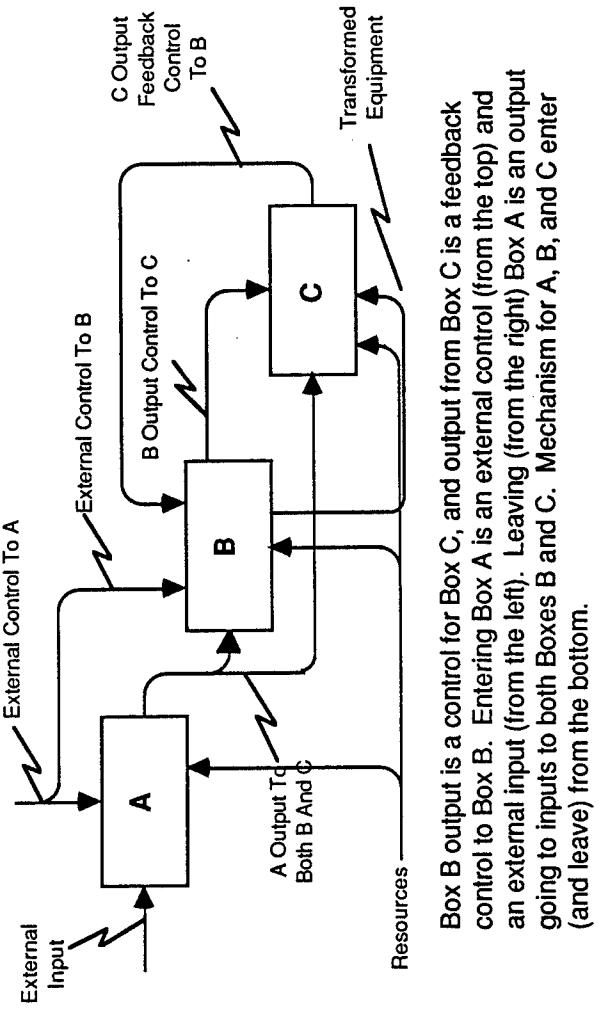
SWHCC	Static War Headquarters Command Center
SWIR	Short Wavelength Infrared
TAC	Tactical Air Command
TAV	Transatmospheric Vehicle
TBD	To Be Determined
TBM	Tactical Ballistic Missile
TBR	To Be Refined
TCN	Terrestrial-Based Communications Network
TDI	Time-Delay Integration
TDRSS	Tracking and Data Relay Satellite System
TEL	Transported Erector Launcher
TRU	Theoretical First Unit Costs
TIR	Terminal Imaging Radar
TMD	Theater Missile Defense
TOF	Time of Flight
TP	Terminal Phase
TPE	Tracking and Pointing Experiment
TRANSCOM	Transportation Command
TRANSIT	Navy Navigation Satellite
TT&C	Telemetry, Tracking, and Communications
TTI	Time-to-Impact
TW/AA	Threat Warning/Attack Assessment
TWT	Travelling Wave Tube
U&S Command	Unified and Specified Commands

UCP	Unified Command Plan
UNAAF	Unified Action Armed Forces (JSC Pub 2)
USCINCEUR	U.S. Commander-in-Chief Europe
USCINCLANT	U.S. Commander-in-Chief Atlantic
USCINCPAC	U.S. Commander-in-Chief Pacific
USEURCOM	U.S. European Command
USLANTCOM	U.S. Atlantic Command
USPACOM	U.S. Pacific Command
USSOUTHCOM	U.S. South Command
USSPACECOM	U.S. Space Command
USSR	Union of Soviet Socialist Republic
U.S.	United States
UV	Ultraviolet
VAFB	Vandenberg Air Force Base
VHSIC	Very High-Speed Integrated Circuit
WBM	Weapon Battle Manager
WIS	WWMCCS Information System
WPI	Wholesale Price Index
WSI	War Support Industry
WWMCCS	Worldwide Military Command and Control System
XRL	X-Ray Laser

SECTION I
IDEF0 FLOWS

INTRODUCTION TO SECTION I

Rockwell selected Integrated Computer Aided Manufacturing (ICAM) as a means to address the characteristics of the Baseline Concept Description (BCD) architecture. This particular methodology for representing the BCD architecture was selected because of its structured approach to modeling and its acceptance within the SDIO community. For those not familiar with IDEF0 (ICAM Definition Zeroeth Order) functional modeling, the position at which the arrow enters a box conveys the specific role of the interface. System controls enter the top of the box, whereas the materials or information acted upon by the system operation enter the box from the left, resulting in the output of the operation, which leaves the right-handed side of the box. The mechanism which performs the operation enters the bottom of the box. The boxes and arrow meanings are used to relate several subfunctions on a diagram comprising a more general function.



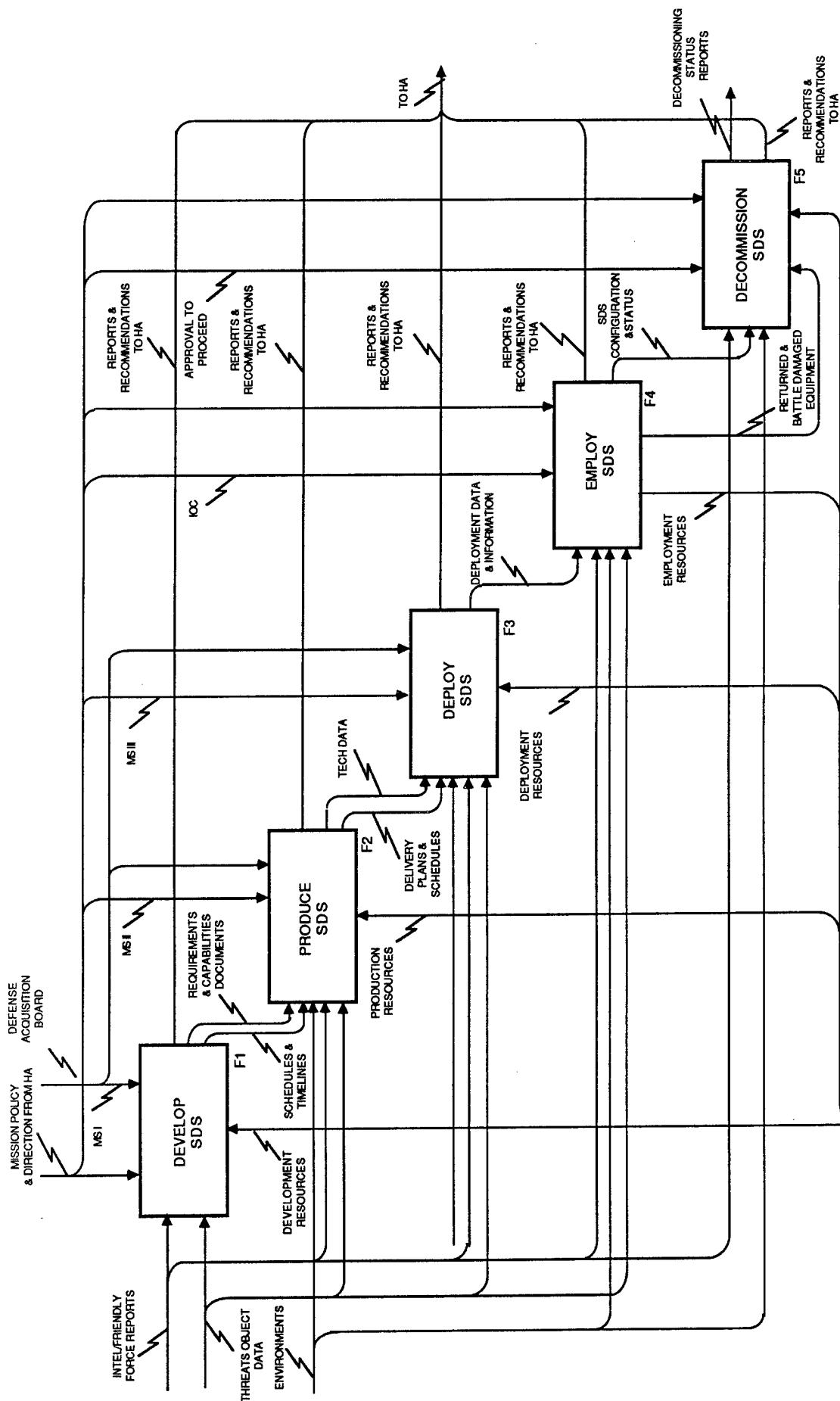
Box B output is a control for Box C, and output from Box C is a feedback control to Box B. Entering Box A is an external control (from the top) and an external input (from the left). Leaving (from the right) Box A is an output going to inputs to both Boxes B and C. Mechanism for A, B, and C enter (and leave) from the bottom.

IDEF0 flows presented in this document are a structured functional representation of the Baseline Concept Description Architecture.

STRATEGIC DEFENSE SYSTEM

IDEFO FLOWS

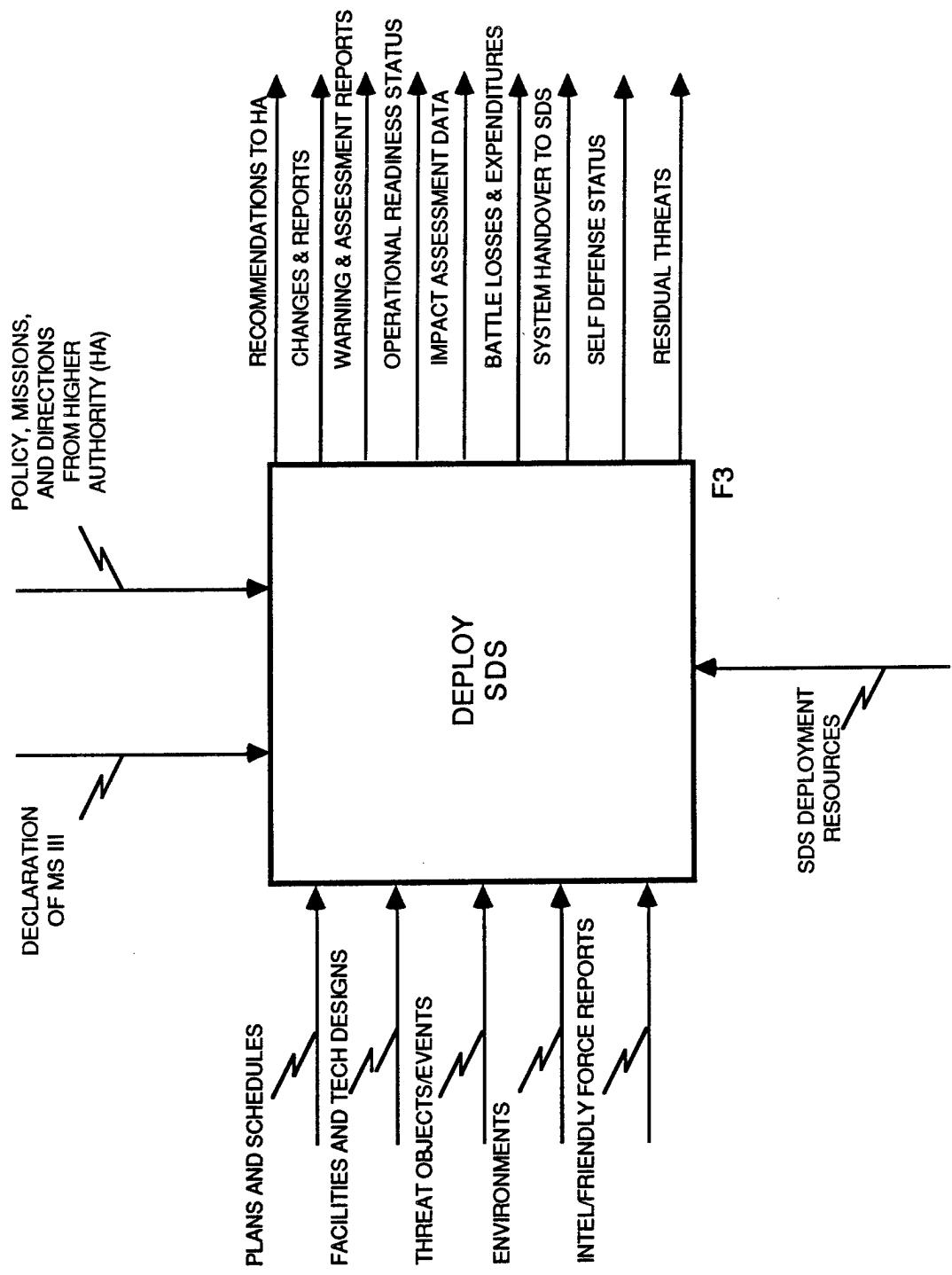
(THE STRATEGIC DEFENSE SYSTEM)



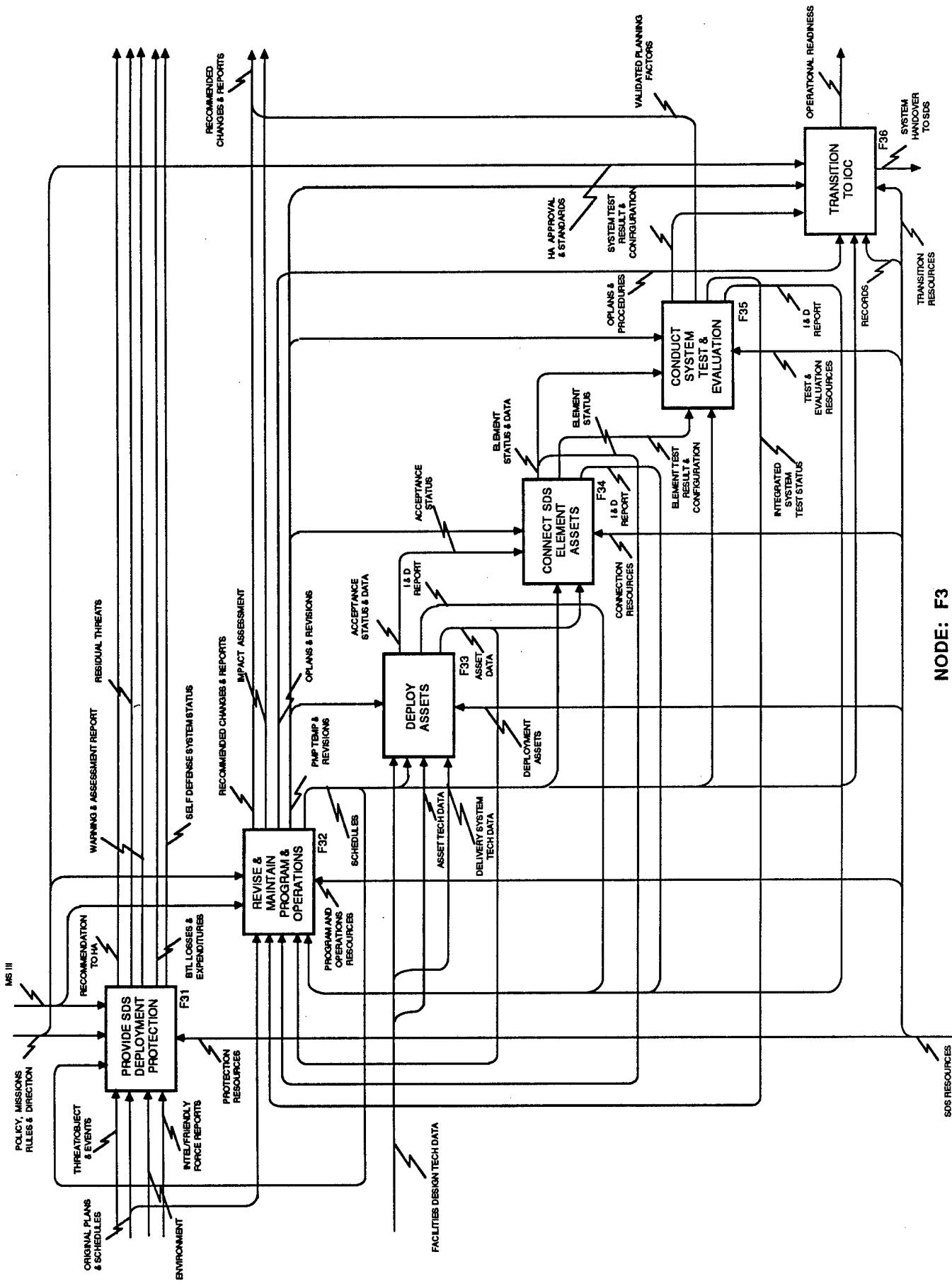
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NODE: F1 thru F5

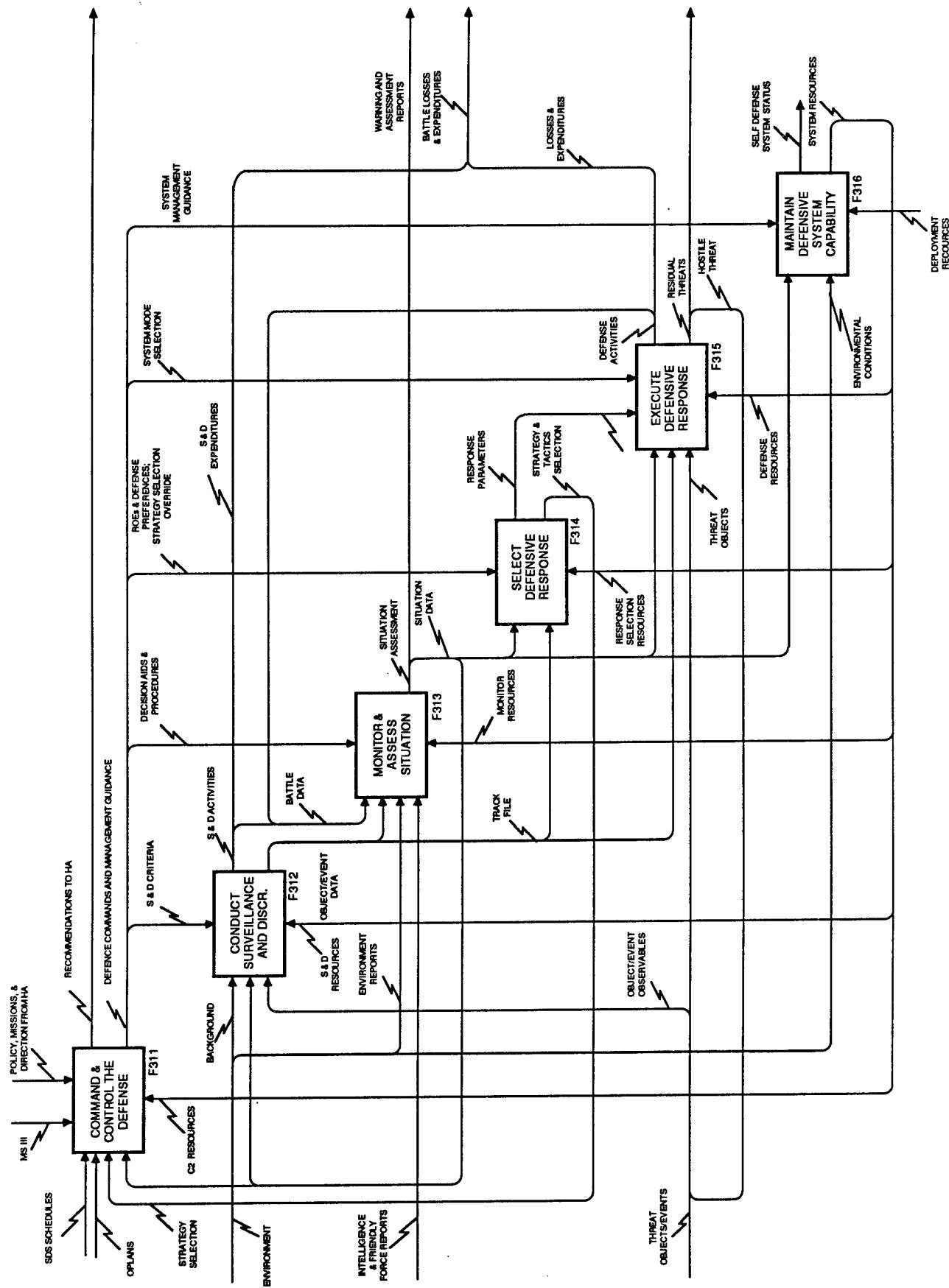
STRATEGIC DEFENSE SYSTEM

**IDEF0 FLOWS
(DEPLOYMENT)**



TITLE: I/O BOUNDARY OF "DEPLOY SDS"
NODE: F3
NODE: F3



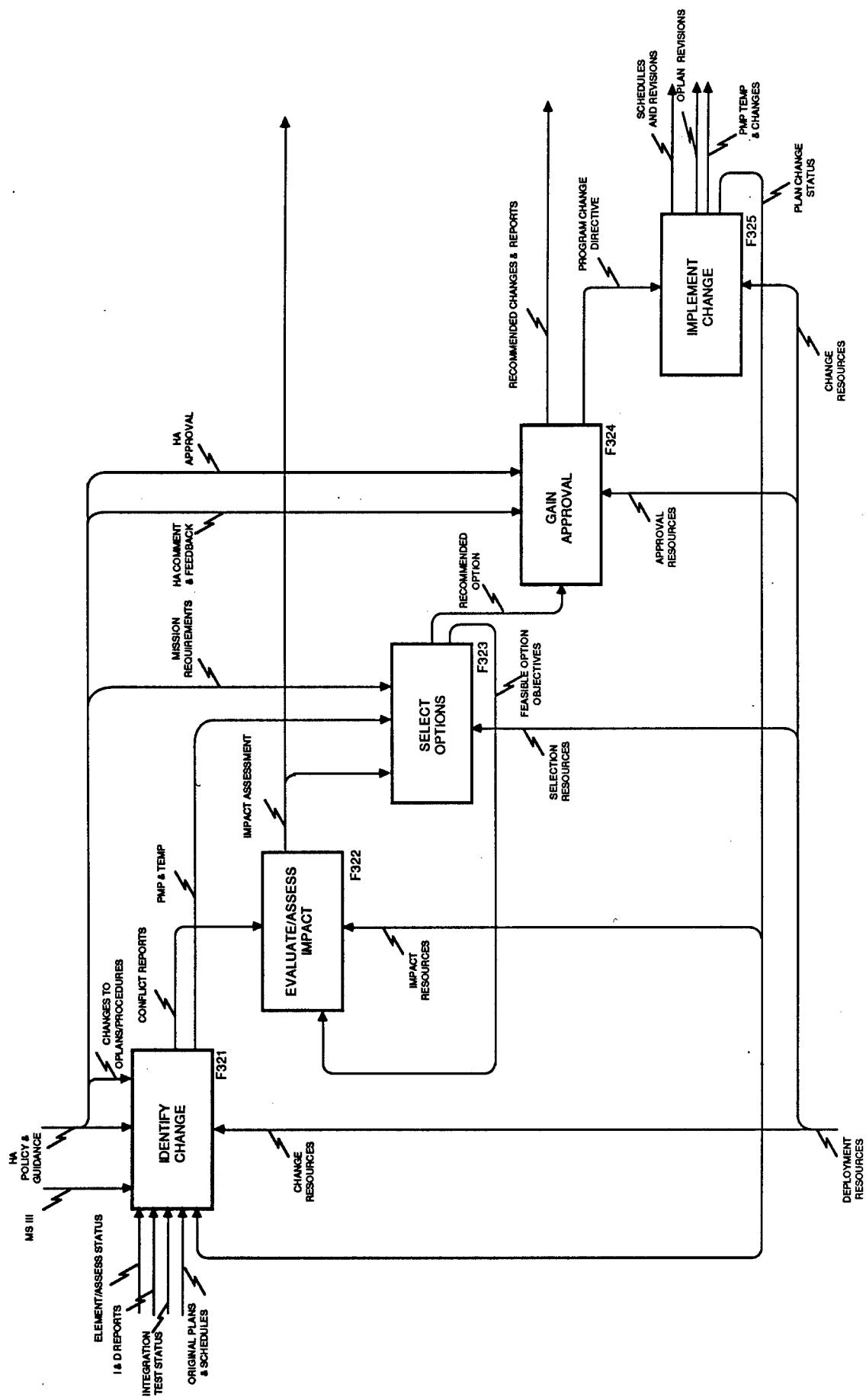


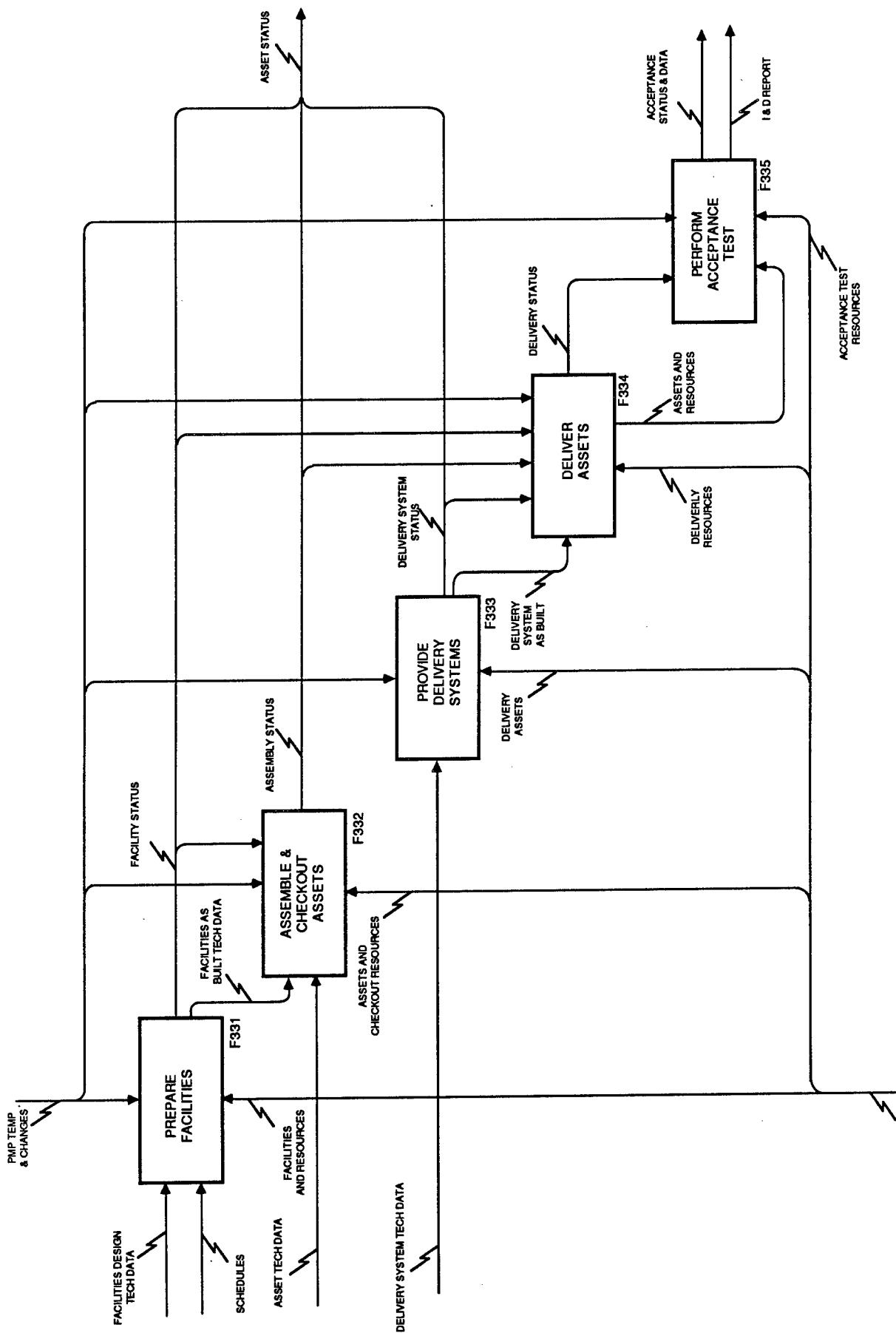
TITLE: SDS DEPLOYMENT PROTECTION

NODE: F31

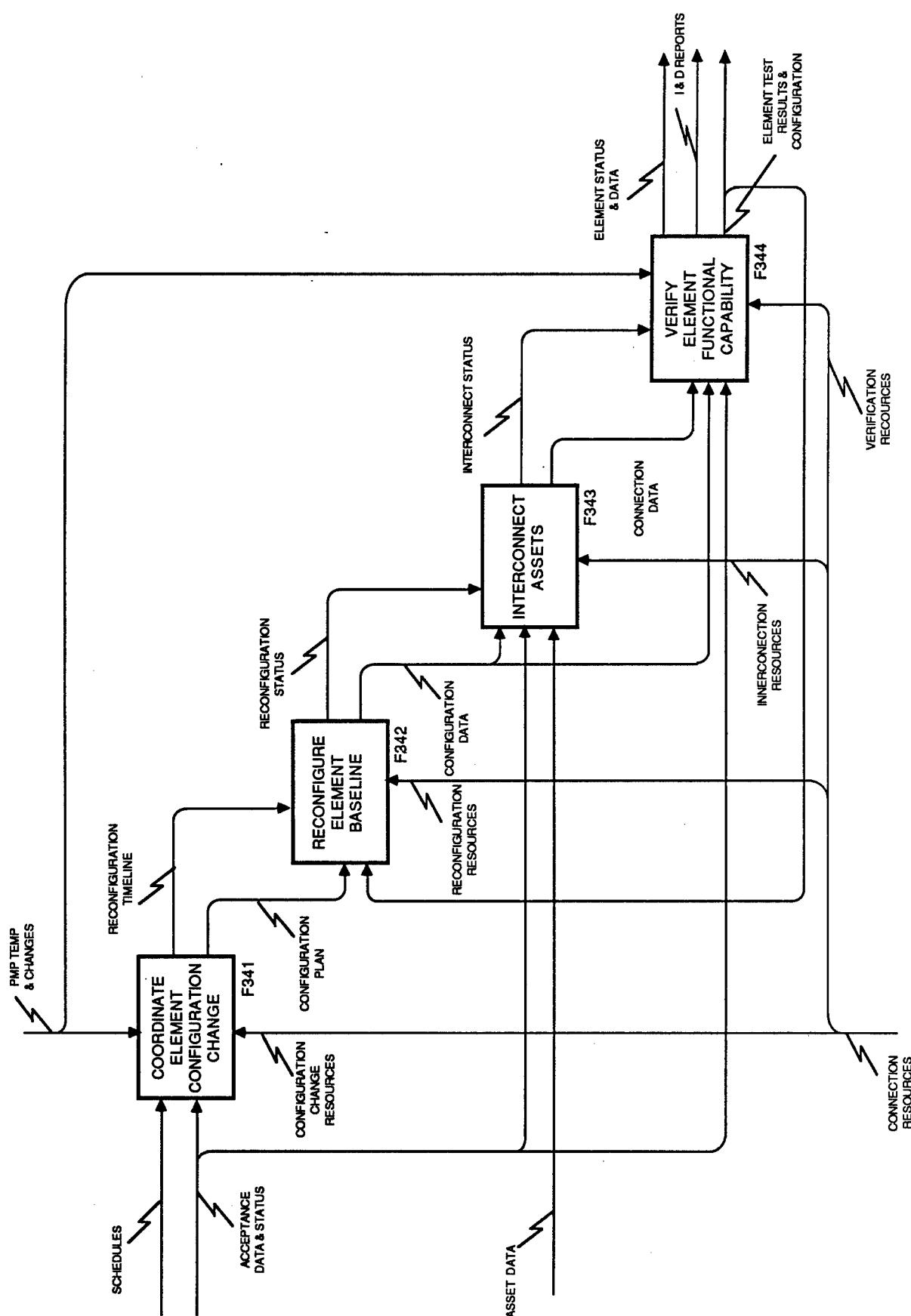
TITLE: REVISE & MAINTAIN PROGRAM MASTER PLANS

NODE: F32





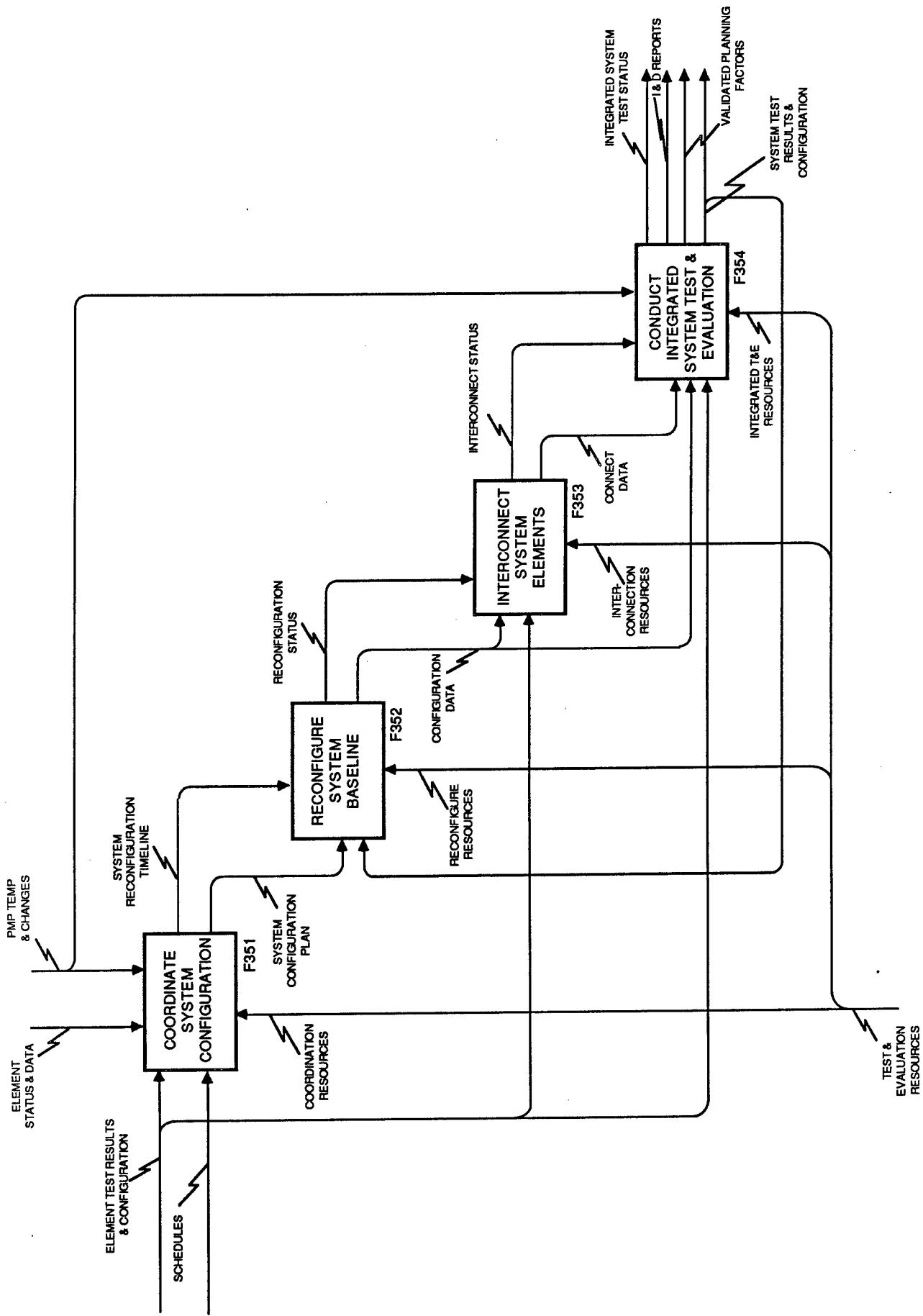
**NODE: F33
TITLE: DEPLOY ASSETS**

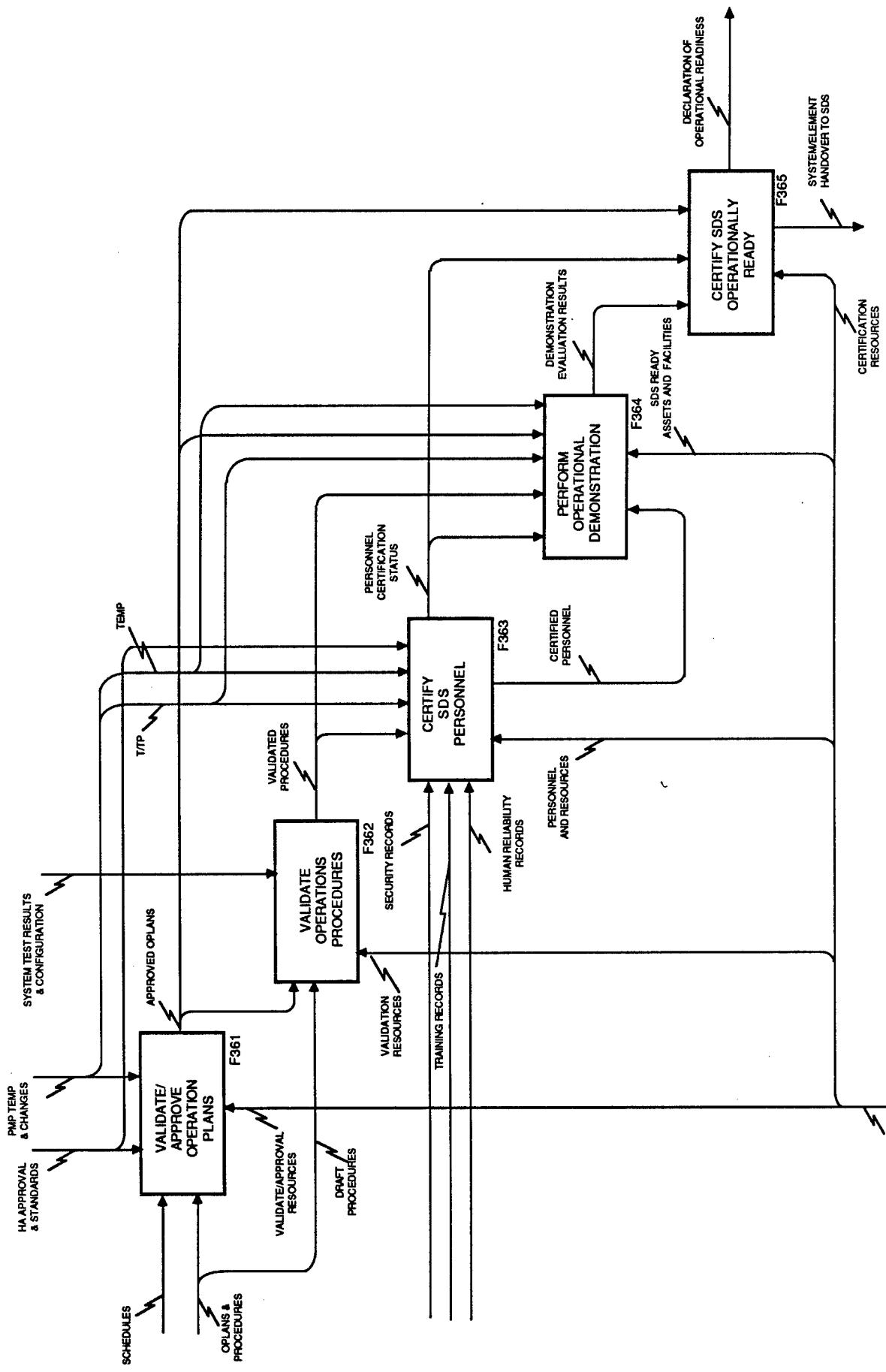


TITLE: CONNECT SDS ELEMENT ASSETS
NODE: F34

TITLE: CONDUCT SYSTEM TEST & EVALUATION

NODE: F33

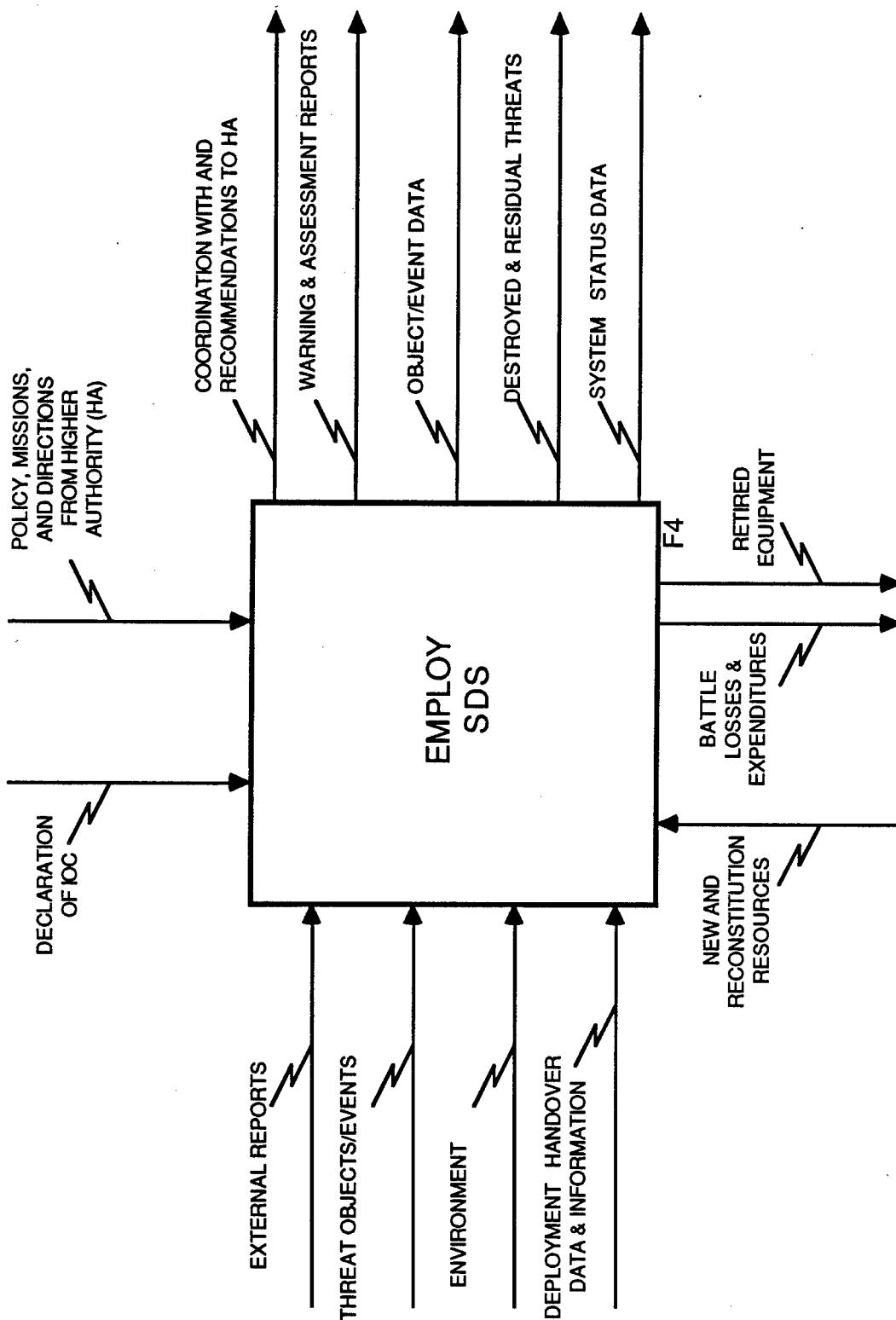




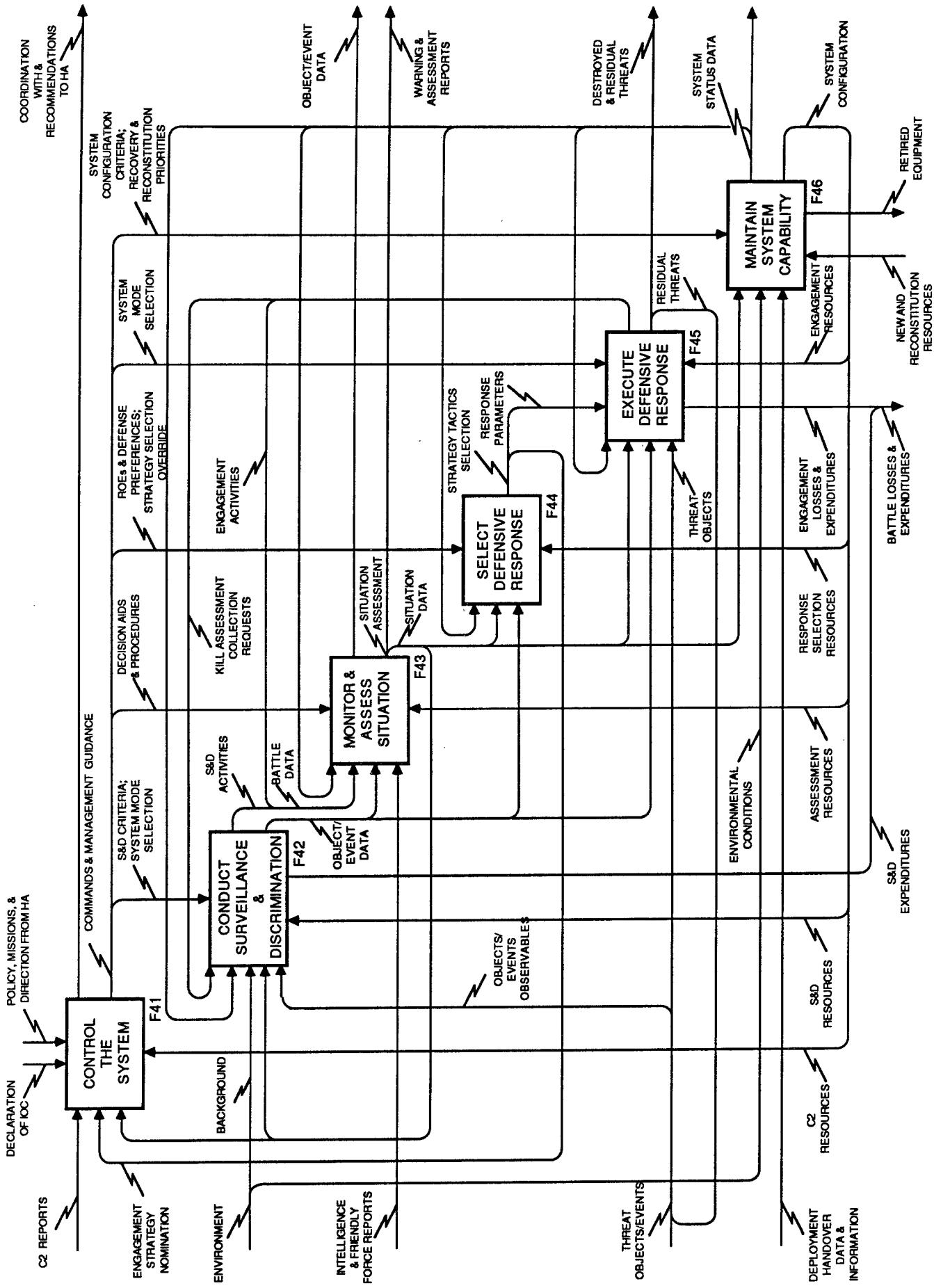
NODE: F36
TITLE: TRANSITION TO IOC

STRATEGIC DEFENSE SYSTEM

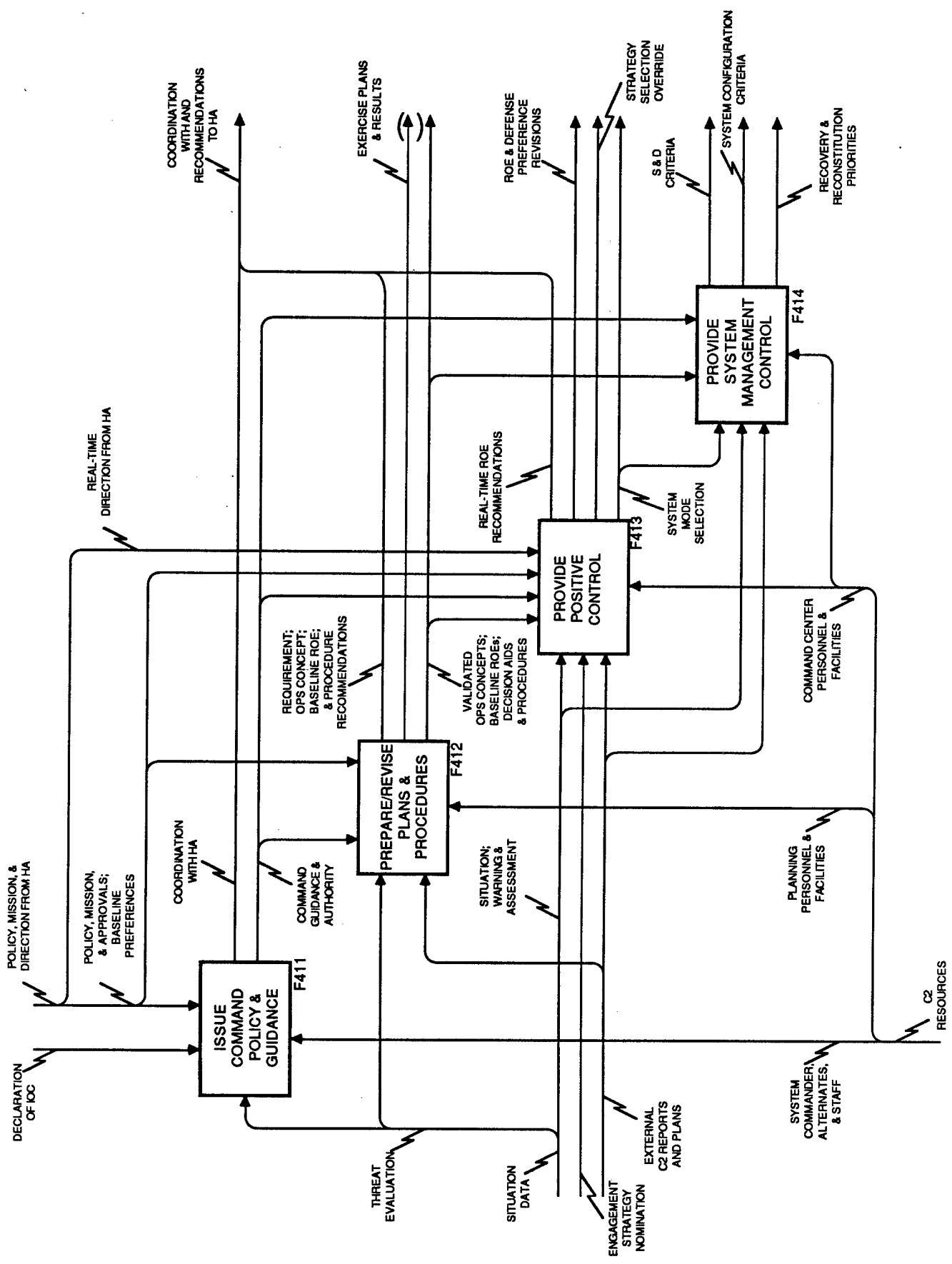
**IDEF0 FLOWS
(EMPLOYMENT)**



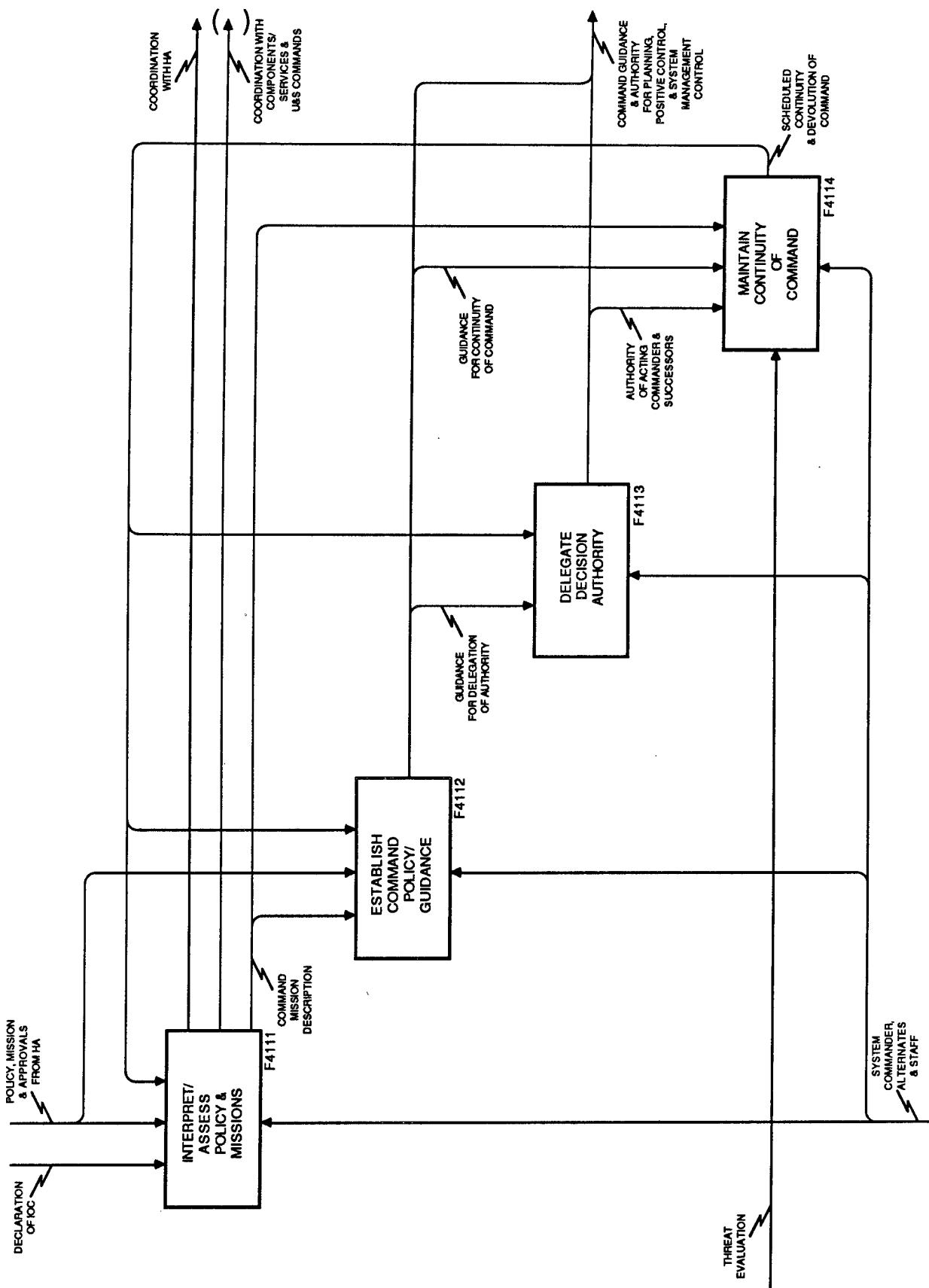
TITLE: I/O BOUNDARY OF "EMPLOY SDS," F4
NODE: F4



TITLE: EMPLOY SDS

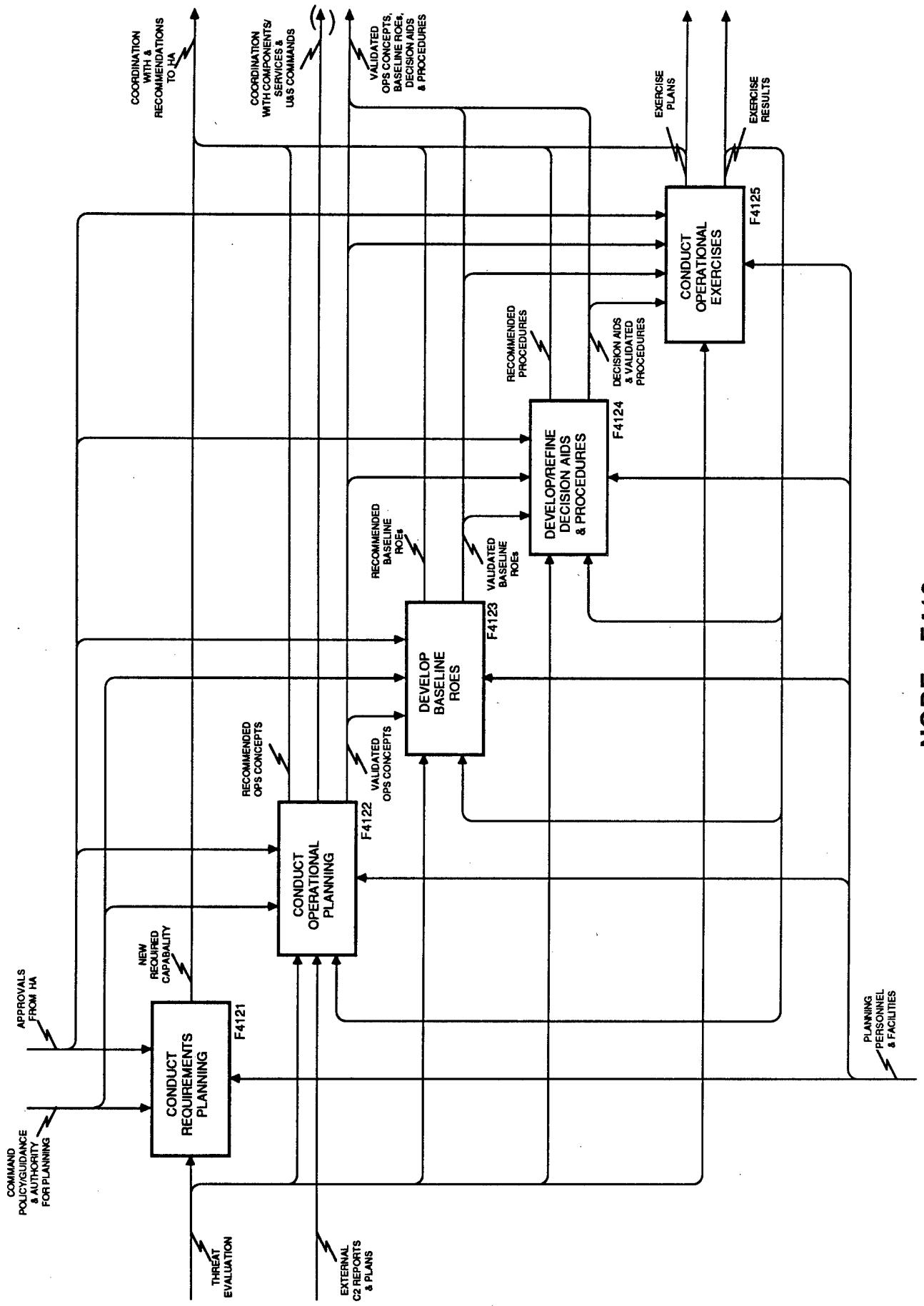


NODE: F41
TITLE: CONTROL THE SYSTEM

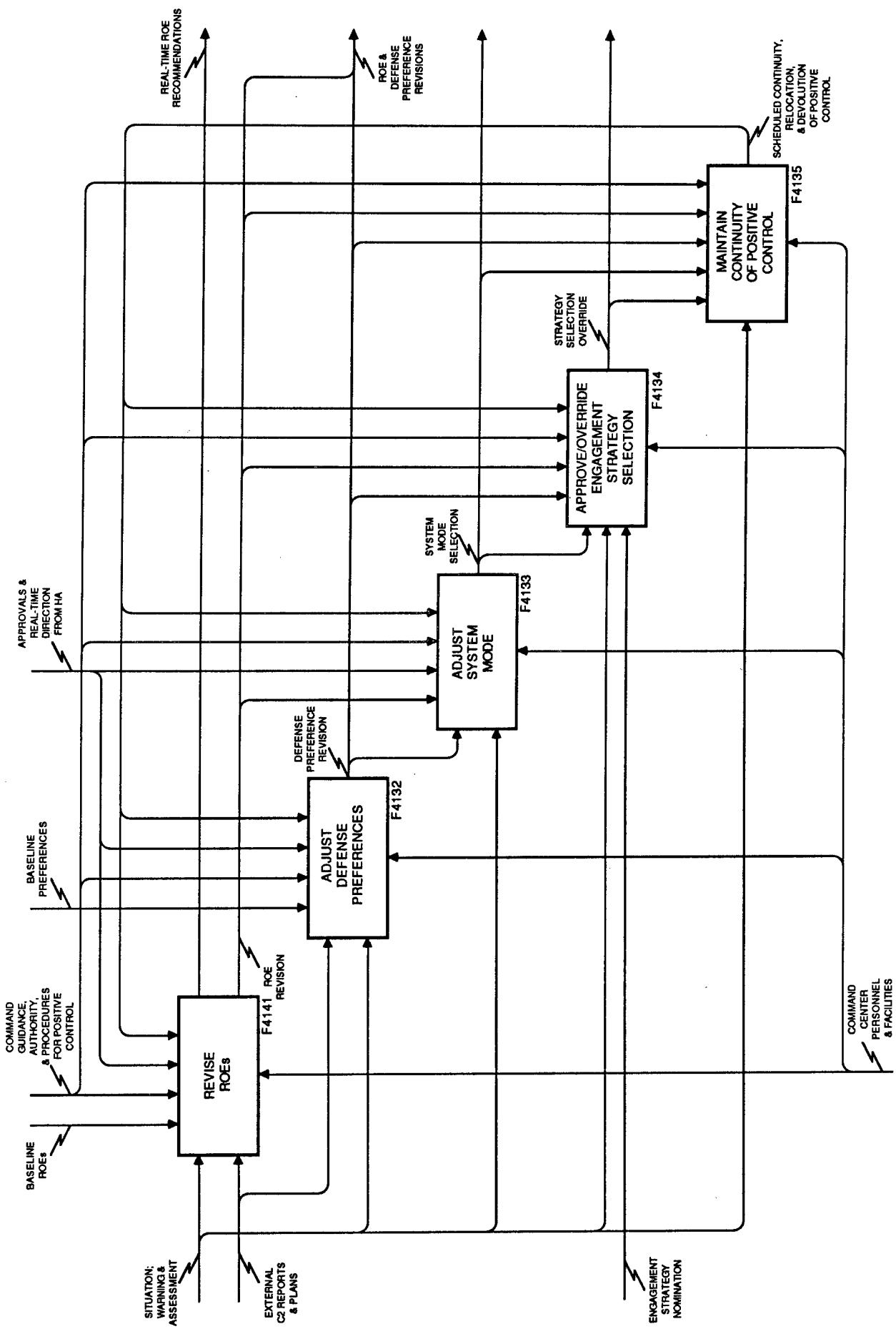


TITLE: ISSUE COMMAND POLICY AND GUIDANCE

NODE: F411

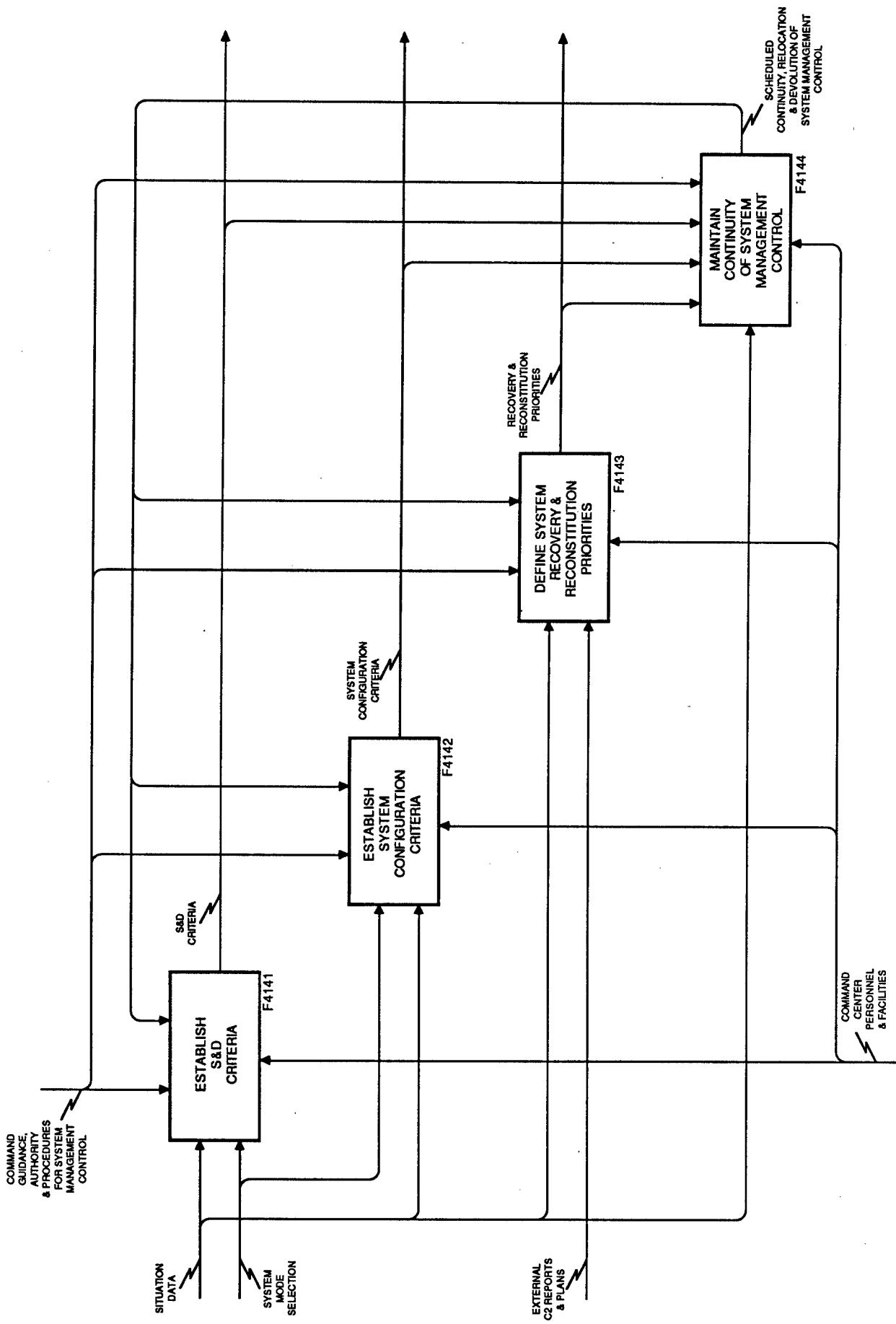


NODE: F412
TITLE: PREPARE/REVISE PLANS AND PROCEDURES

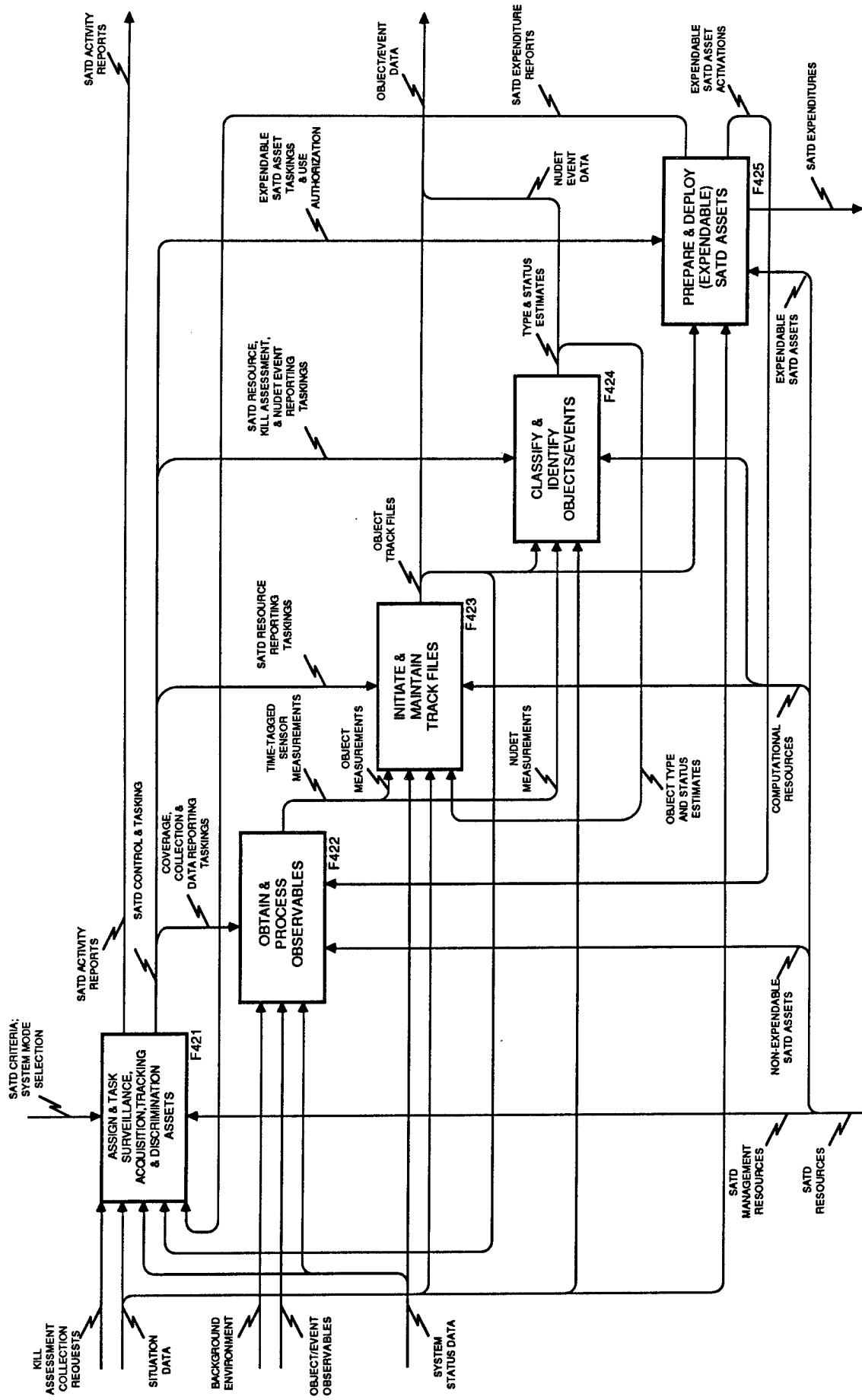


TITLE: PROVIDE POSITIVE CONTROL

NODE: F413

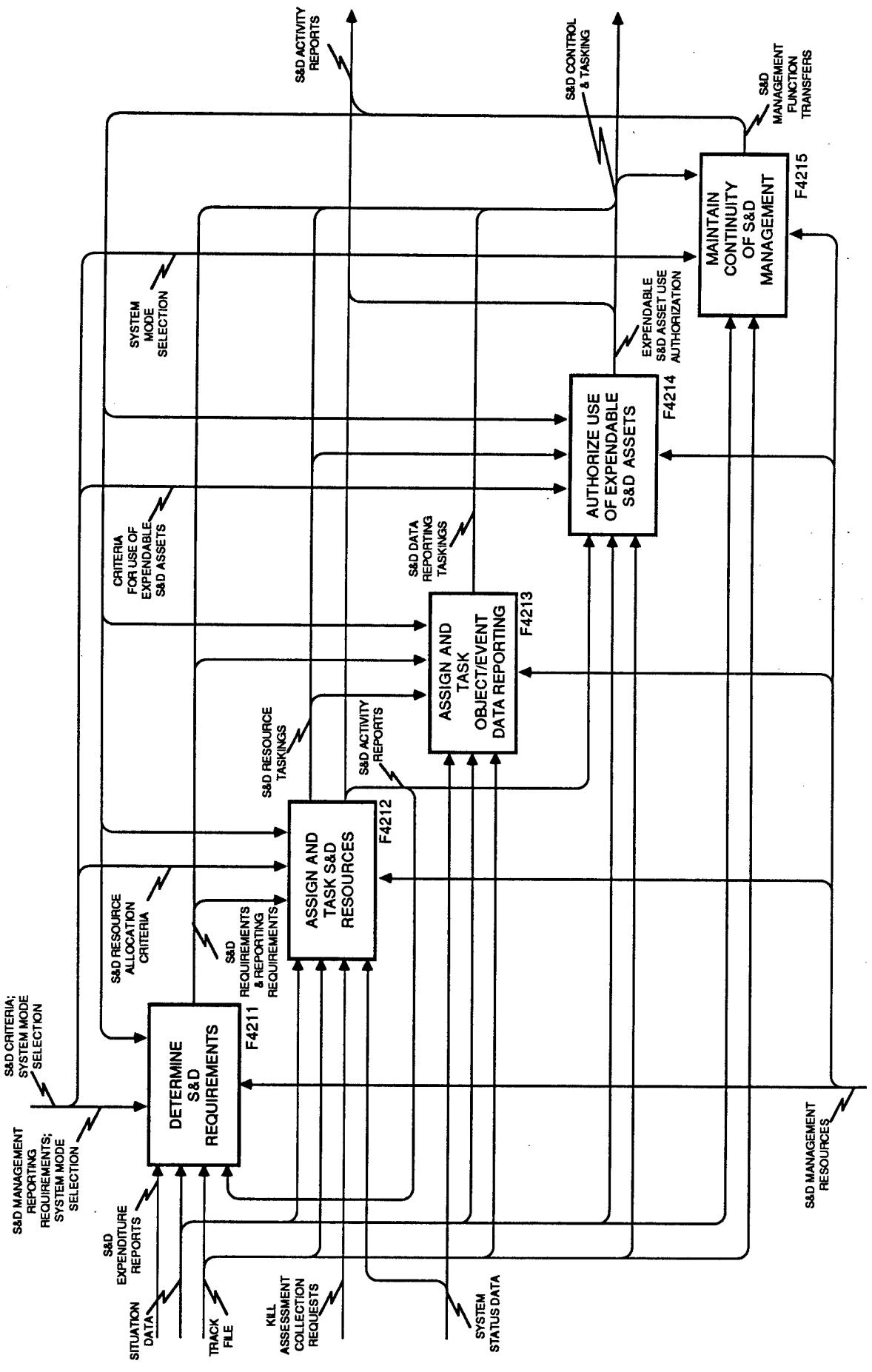


TITLE: PROVIDE SYSTEM MANAGEMENT CONTROL
NODE: F414



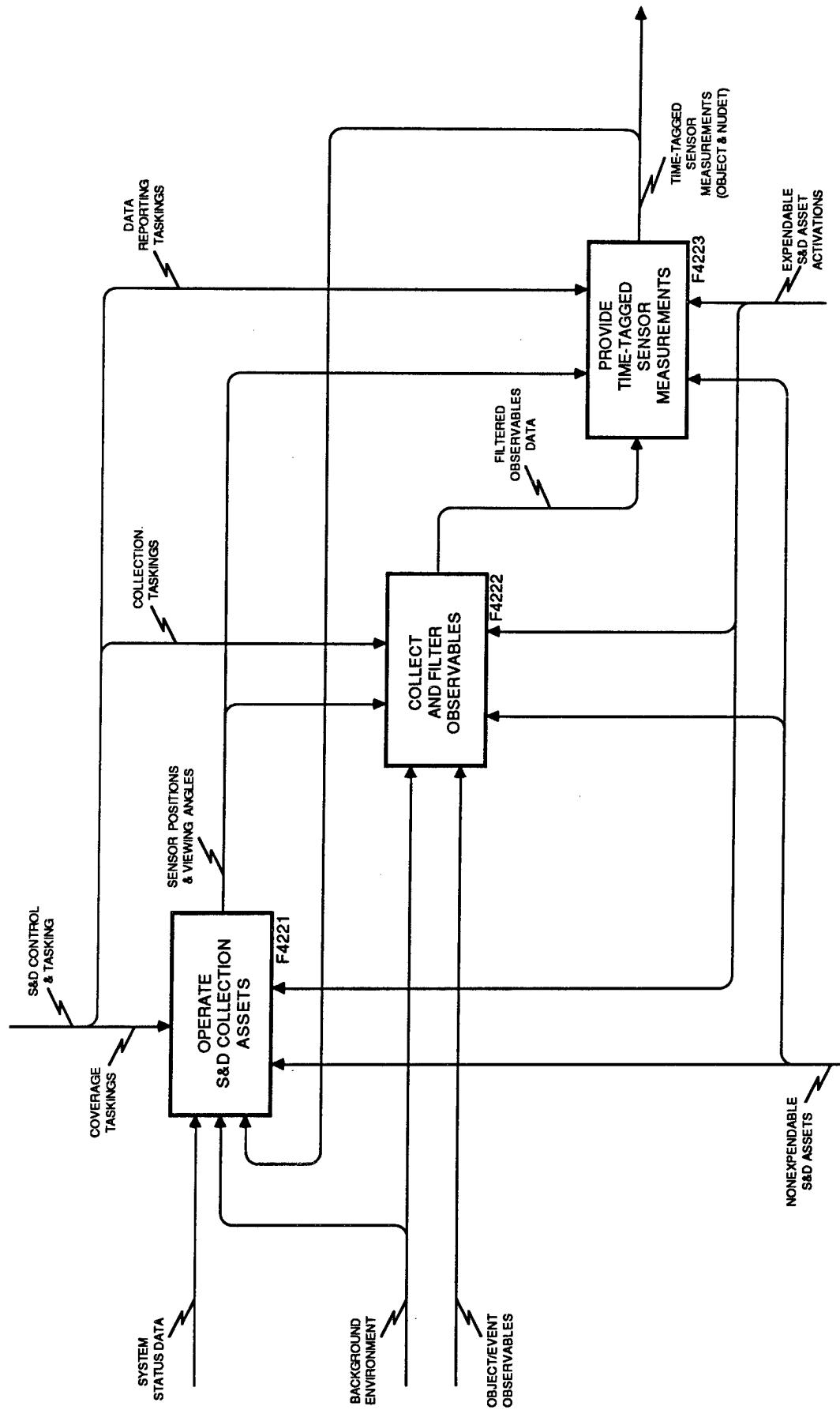
TITLE: CONDUCT SURVEILLANCE, ACQUISITION, TRACKING AND DISCRIMINATION (SATD)

NODE: F42



TITLE: MANAGE SURVEILLANCE AND DISCRIMINATION

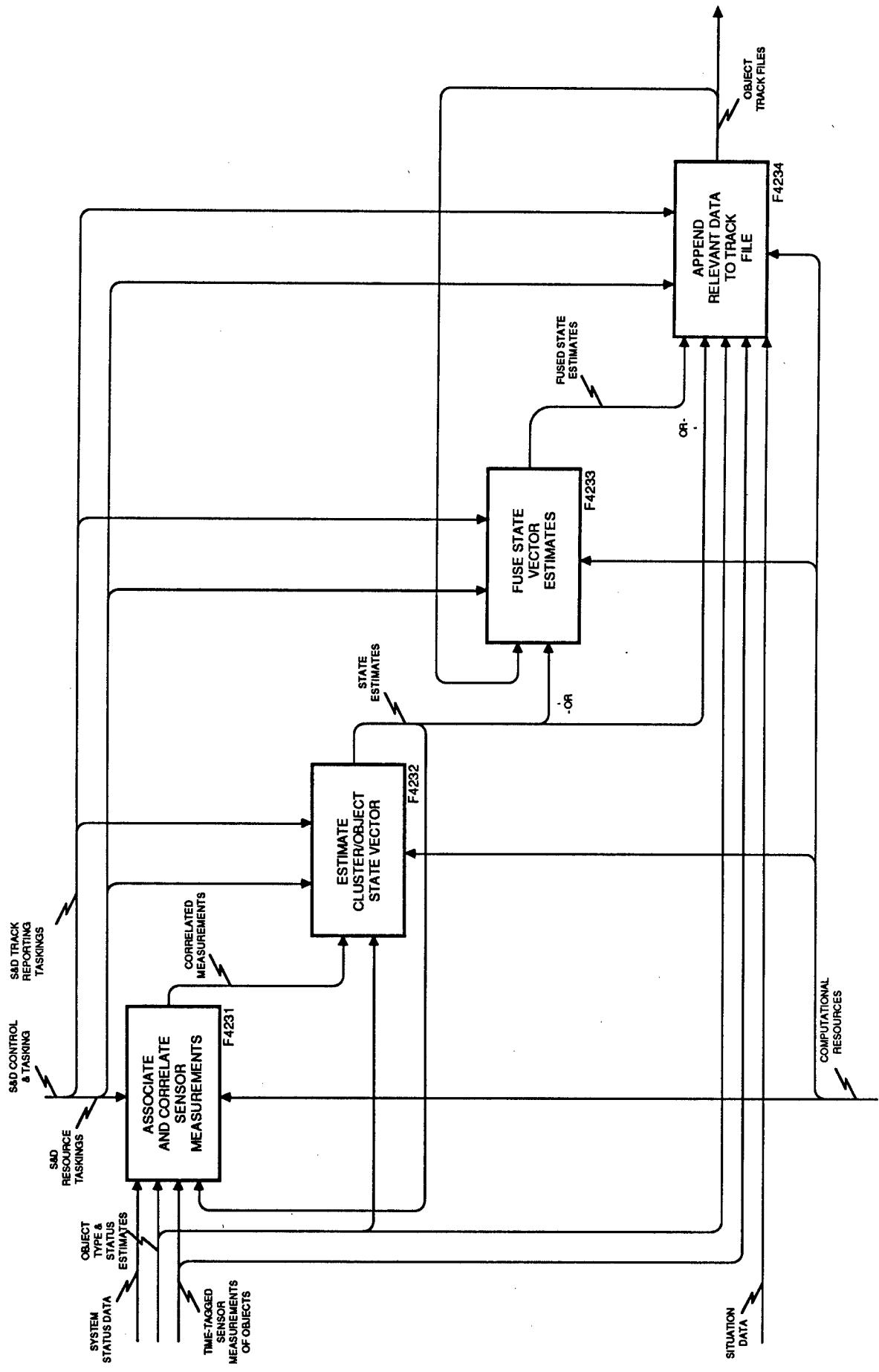
NODE: F421

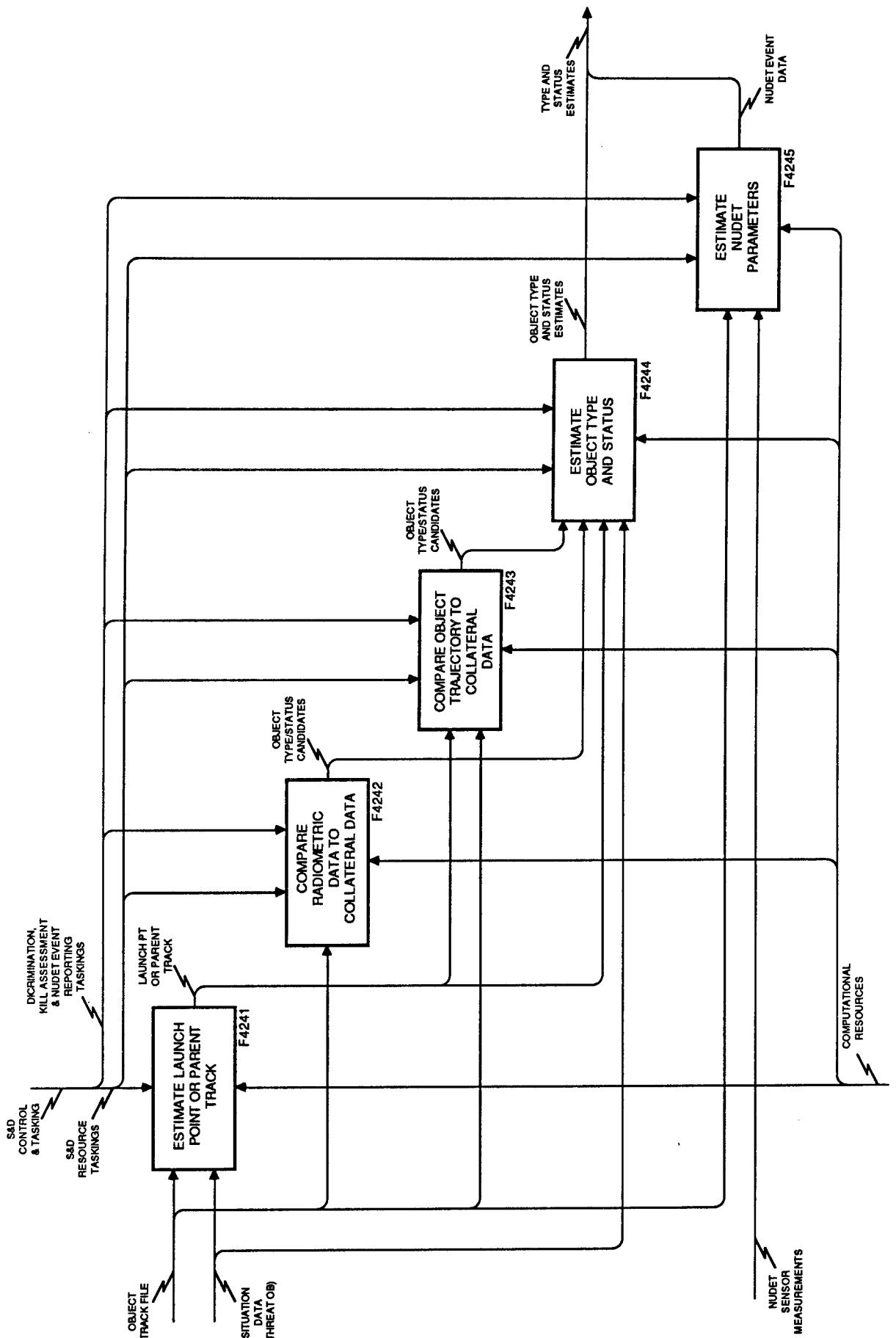


TITLE: OBTAIN AND PROCESS OBSERVABLES
NODE: F422

TITLE: INITIATE AND MAINTAIN OBJECT TRACK FILES

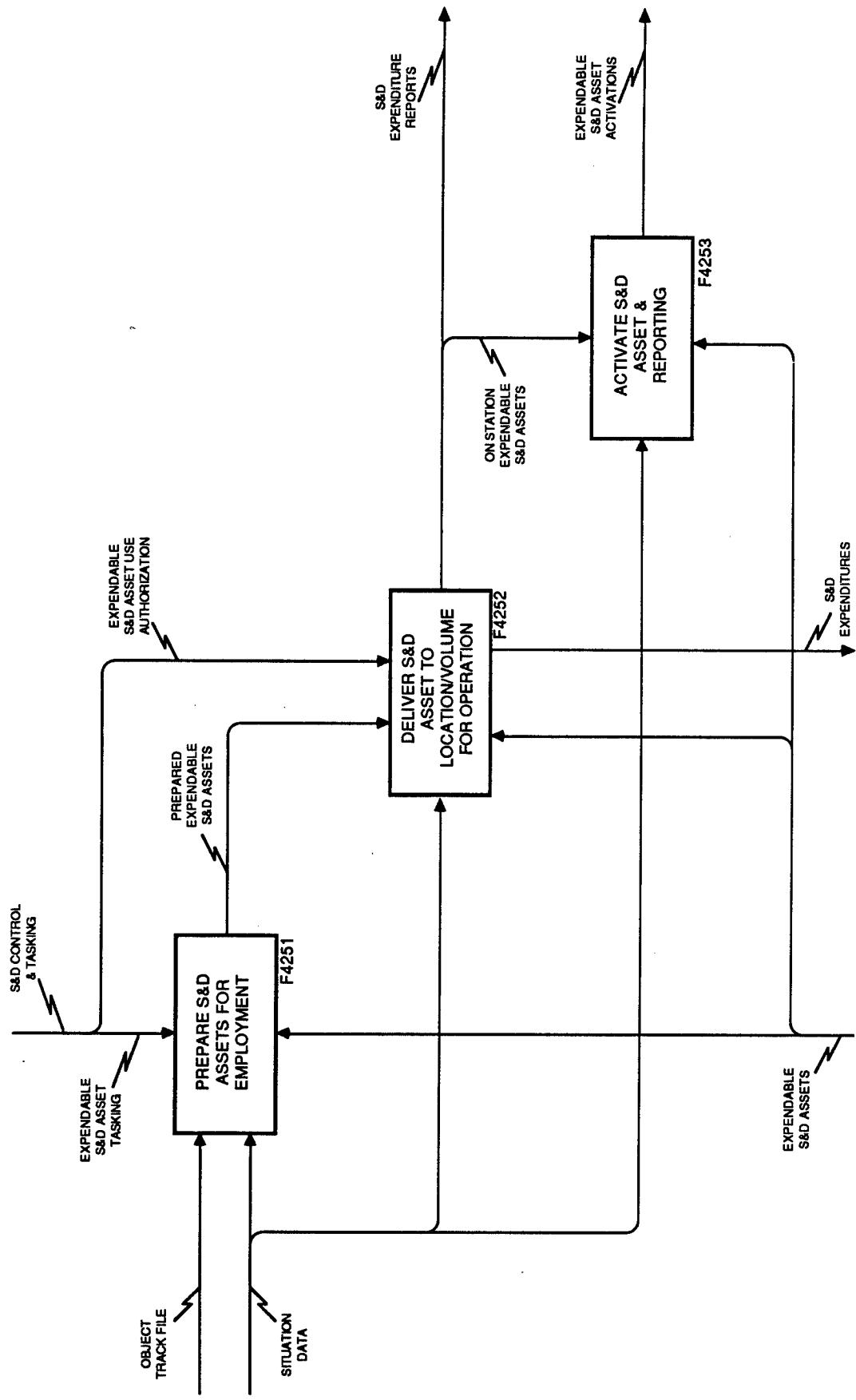
NODE: F423



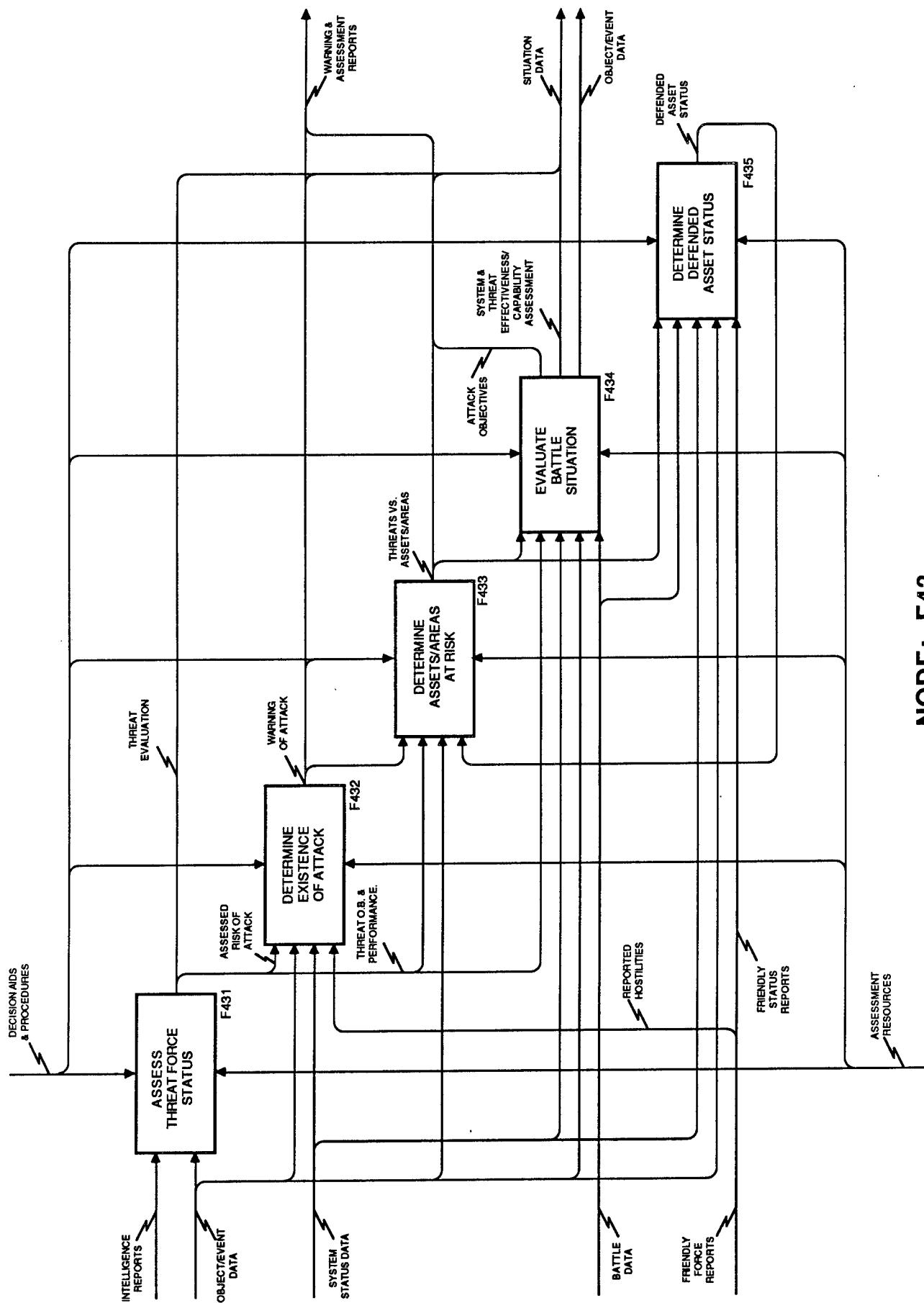


TITLE: CLASSIFY AND IDENTIFY OBJECTS/EVENTS

NODE: F424

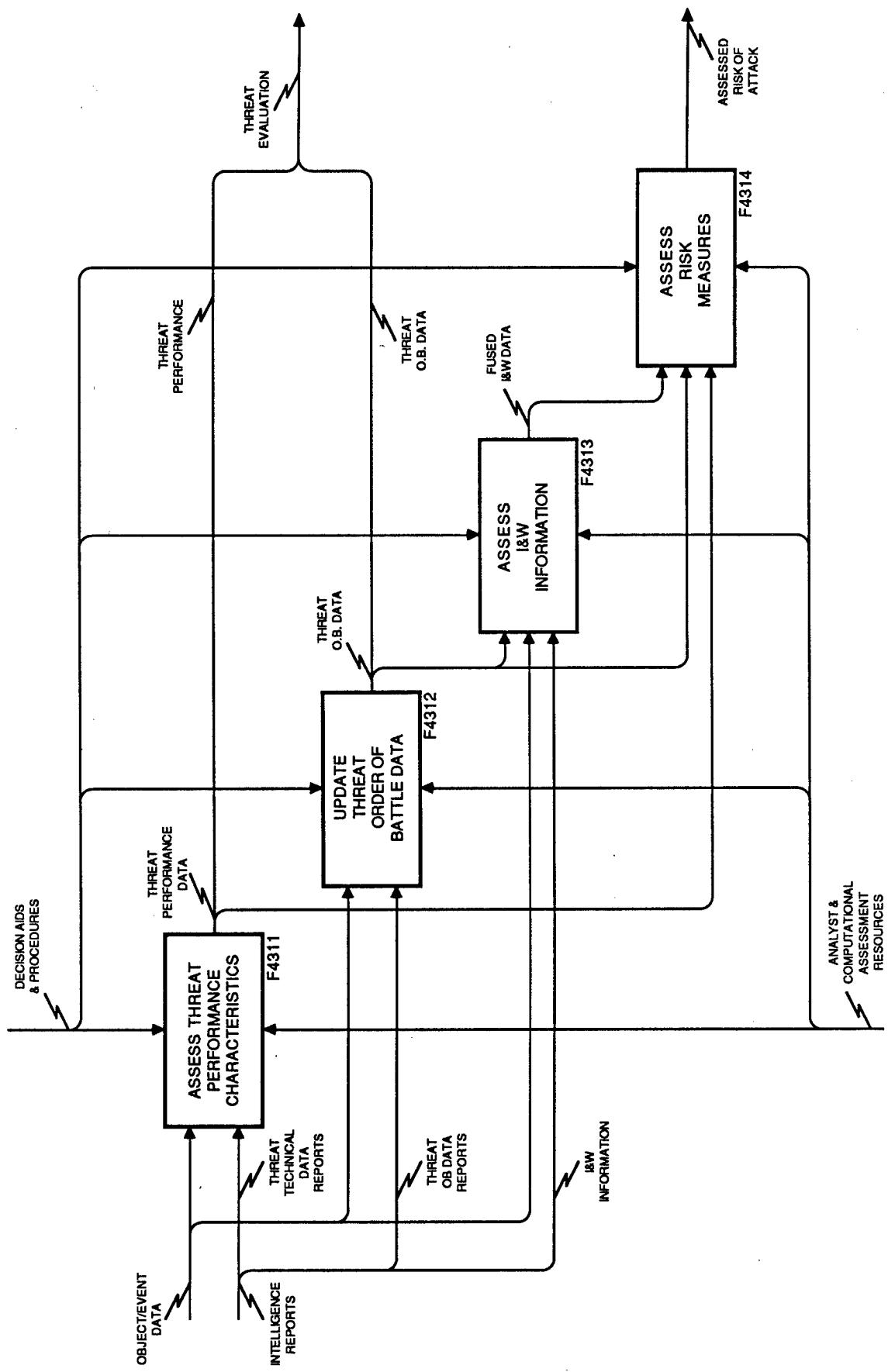


TITLE: EMPLOY EXPENDABLE S&D ASSETS
NODE: F425

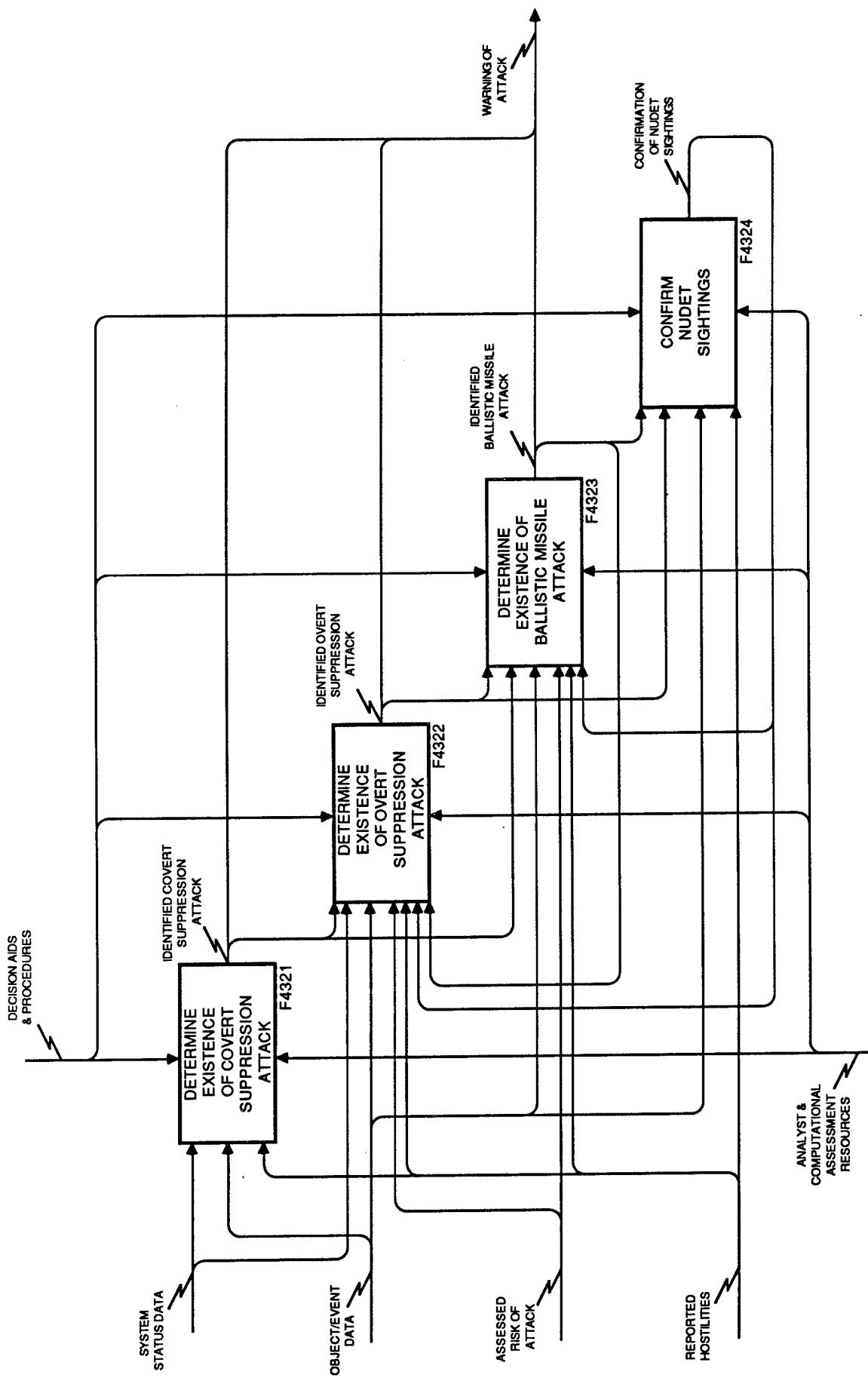


TITLE: MONITOR AND ASSESS SITUATION

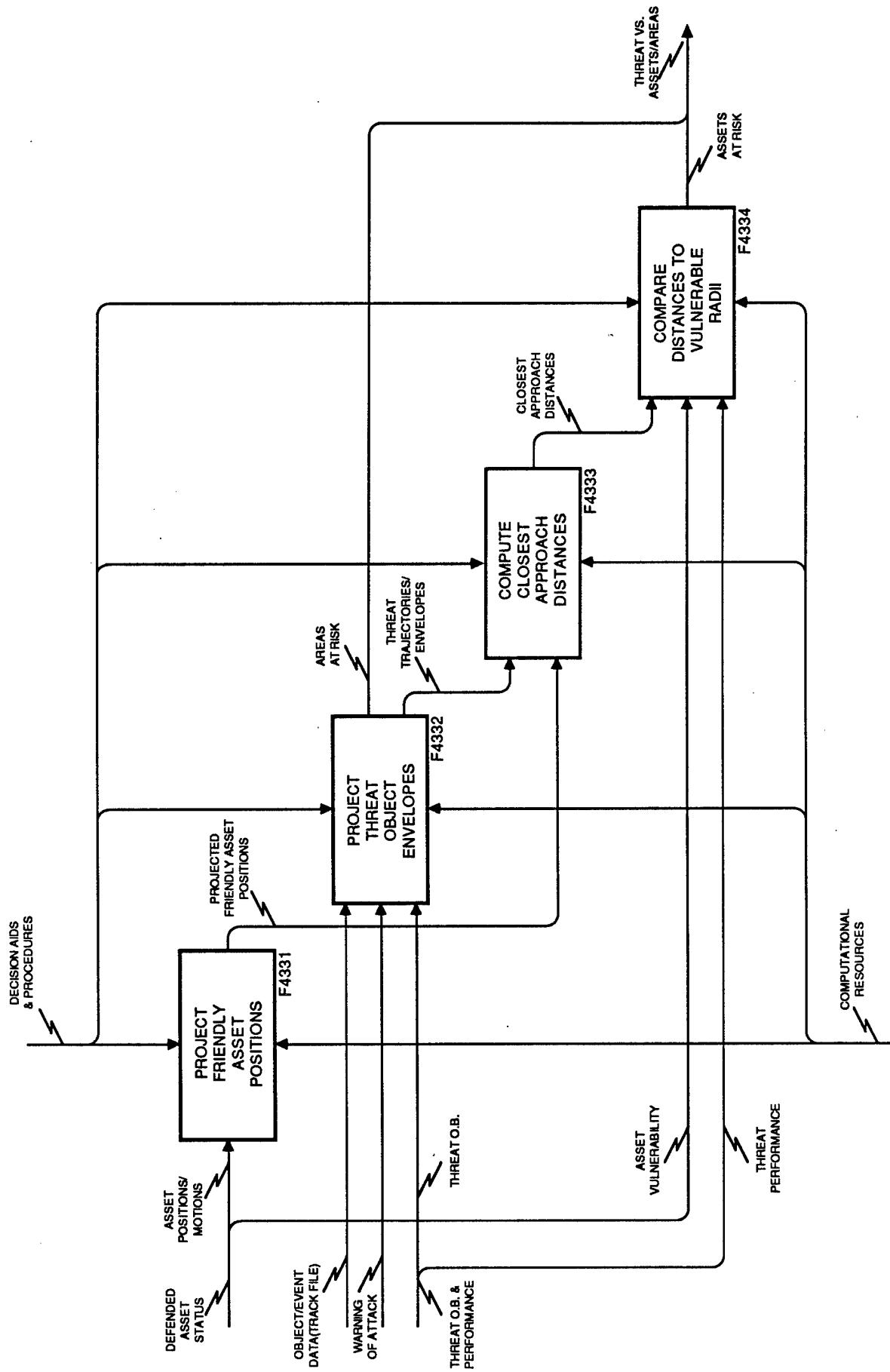
D-28



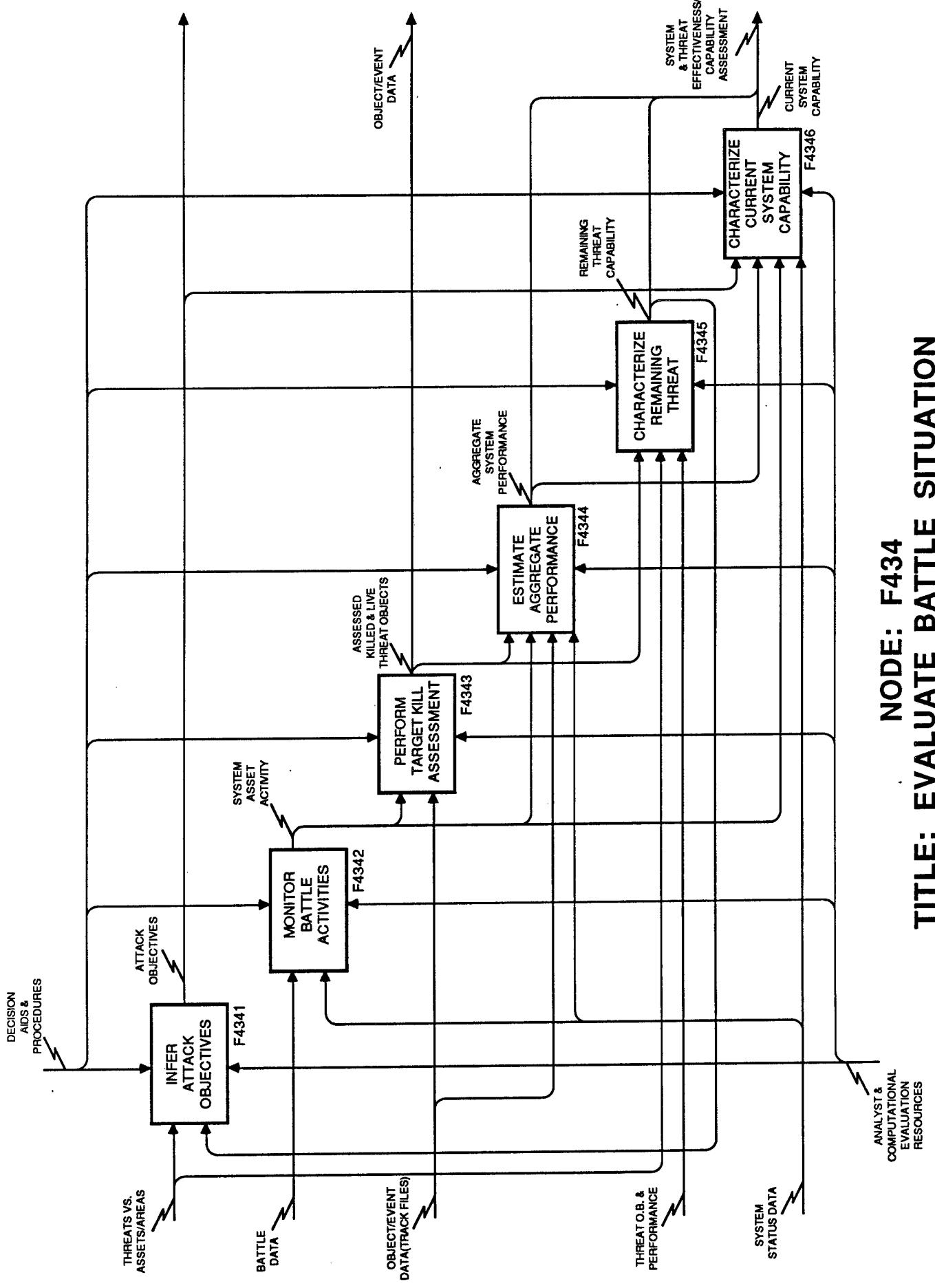
TITLE: ASSESS THREAT FORCE STATUS
NODE: F431



NODE: F432
TITLE: DETERMINE EXISTANCE OF ATTACK



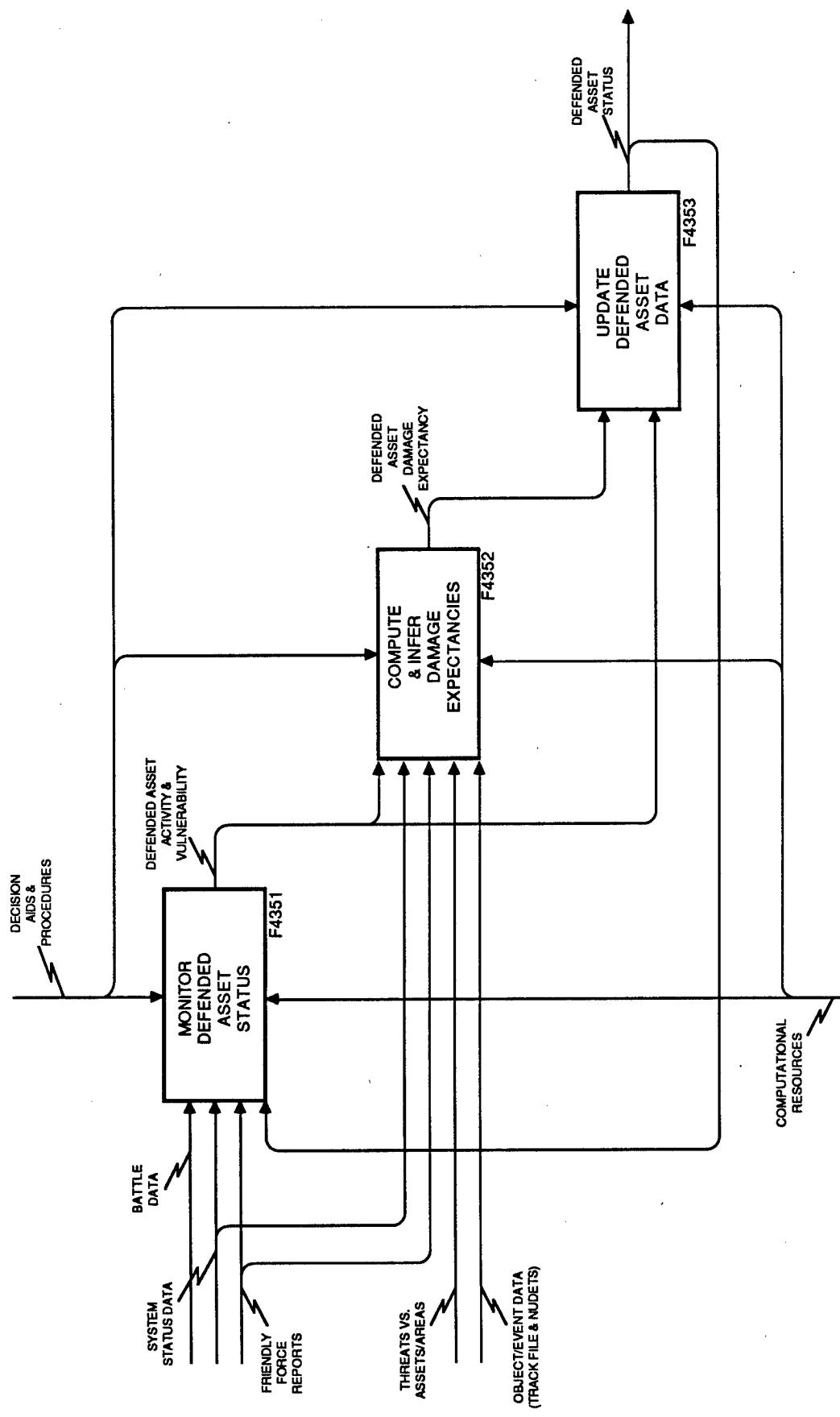
TITLE: DETERMINE ASSETS/AREAS AT RISK
NODE: F433

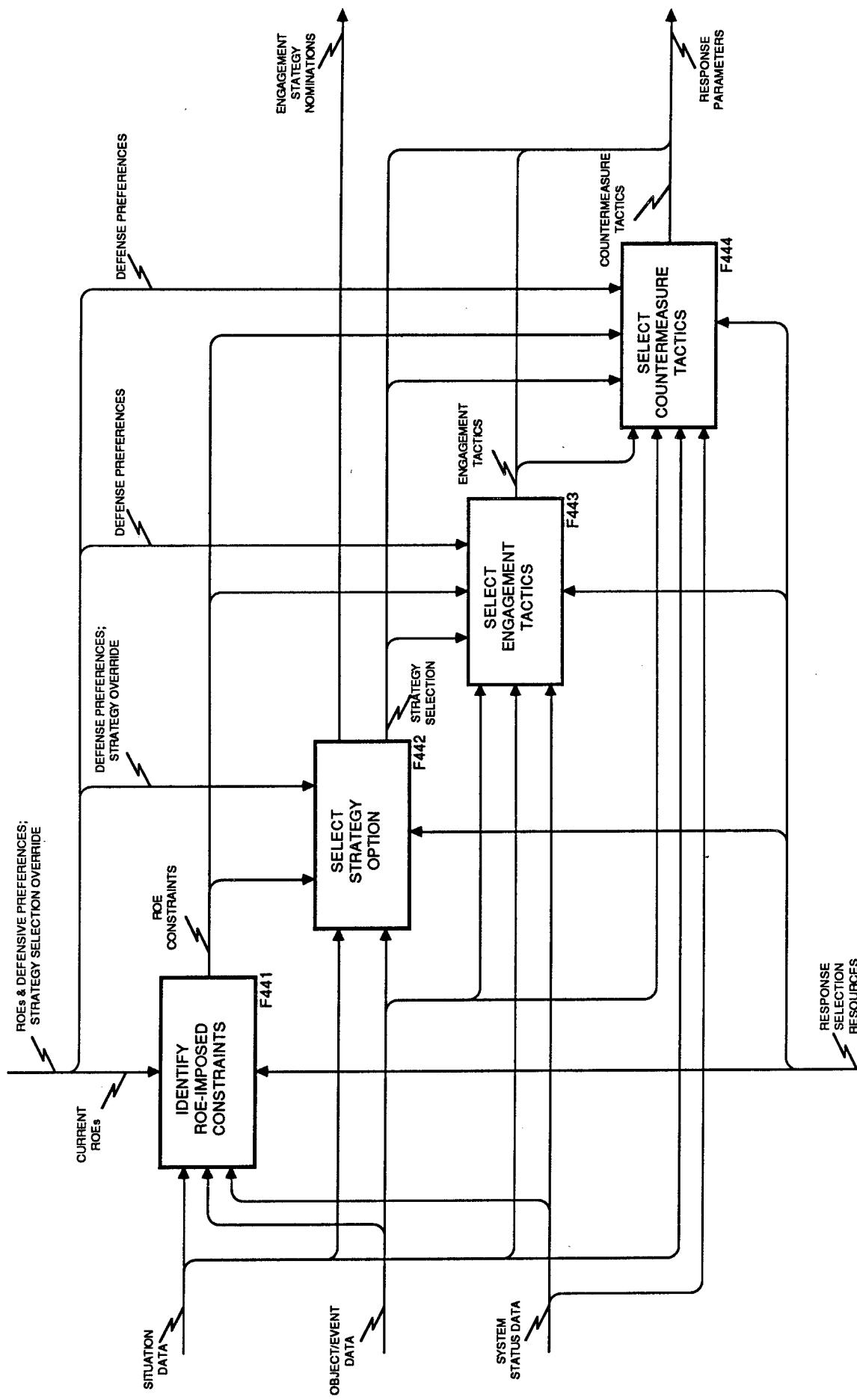


NODE: F434
TITLE: EVALUATE BATTLE SITUATION

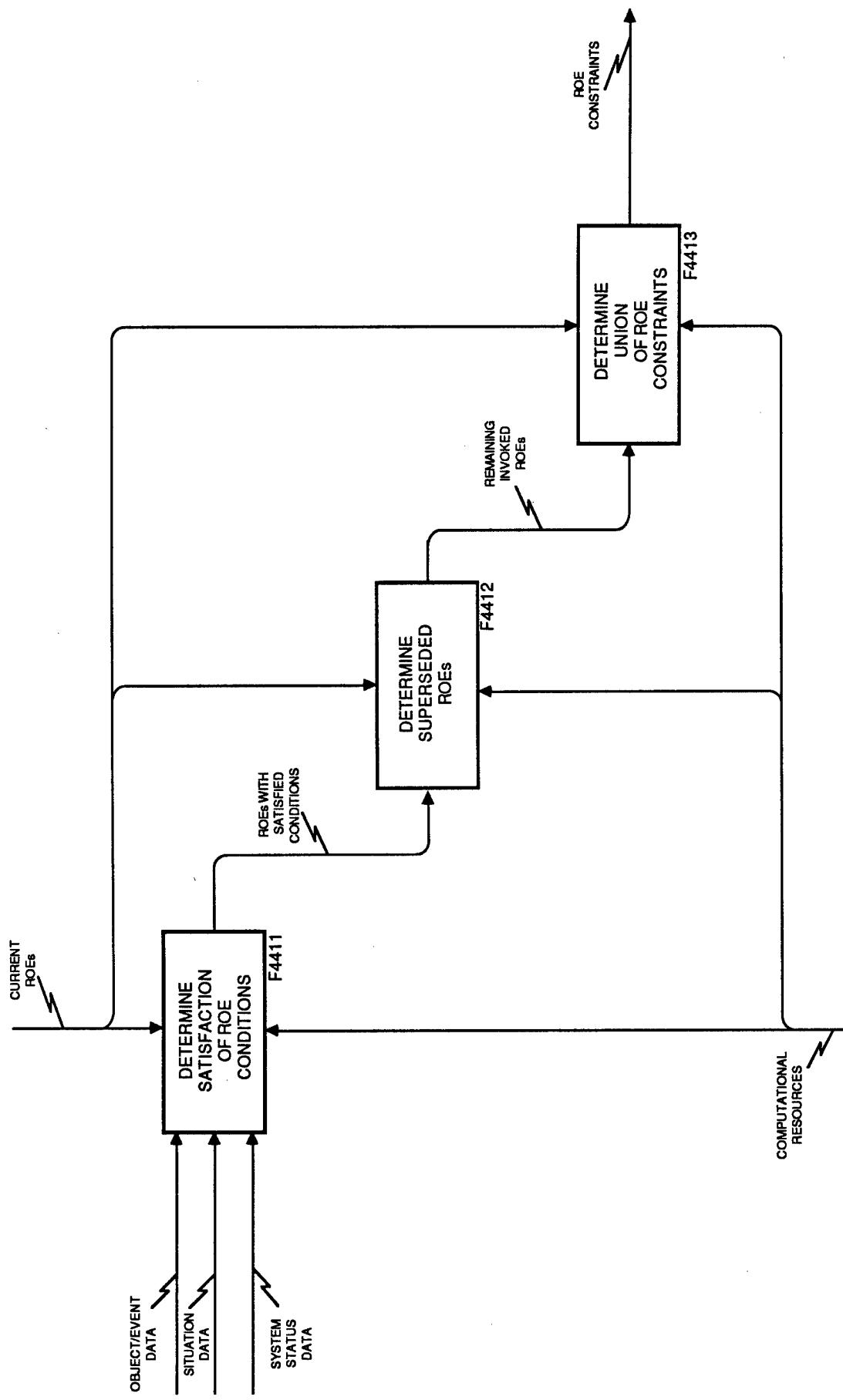
TITLE: DETERMINE DEFENDED ASSET STATUS

NODE: F435



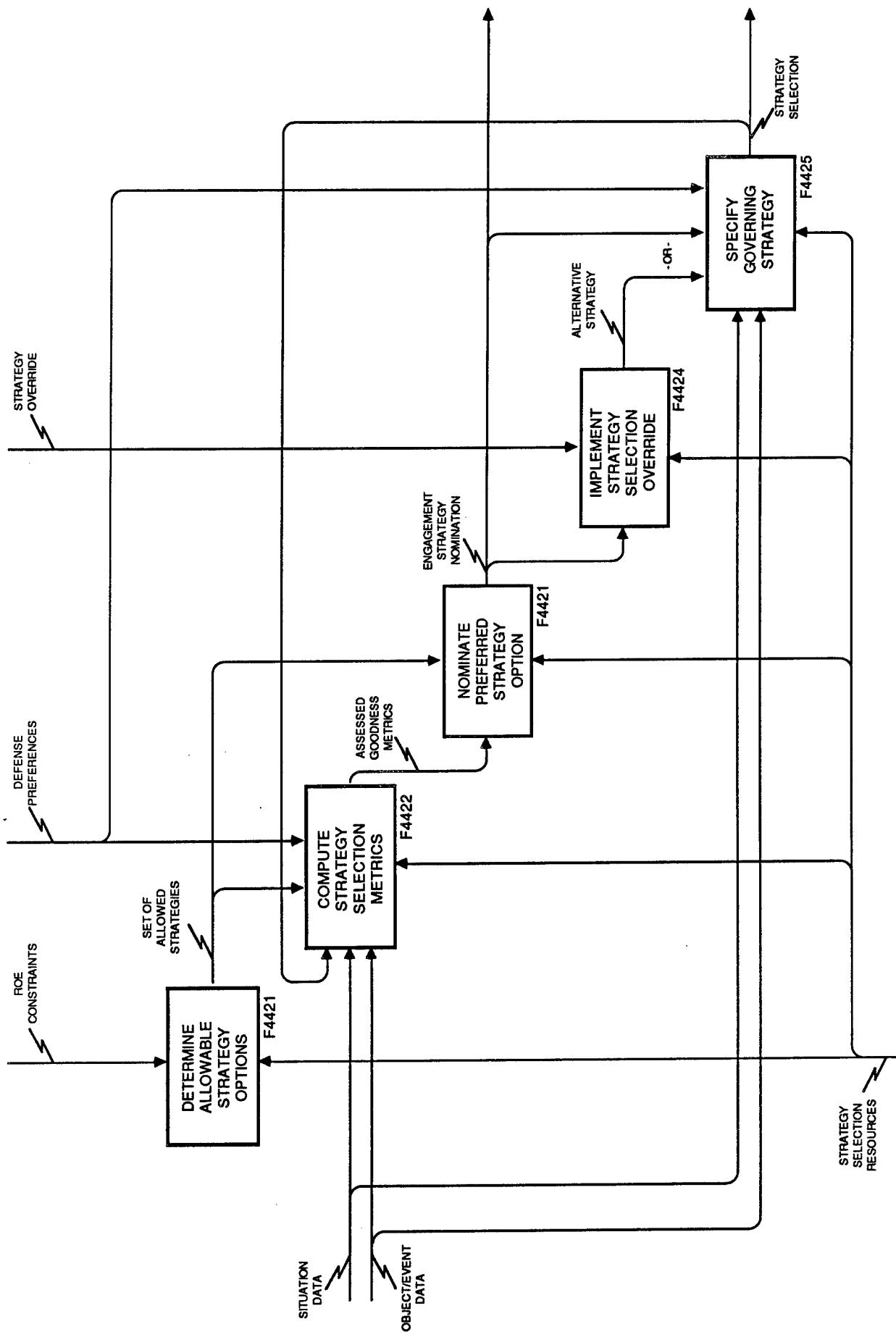


NODE: F44
TITLE: SELECT DEFENSIVE RESPONSE



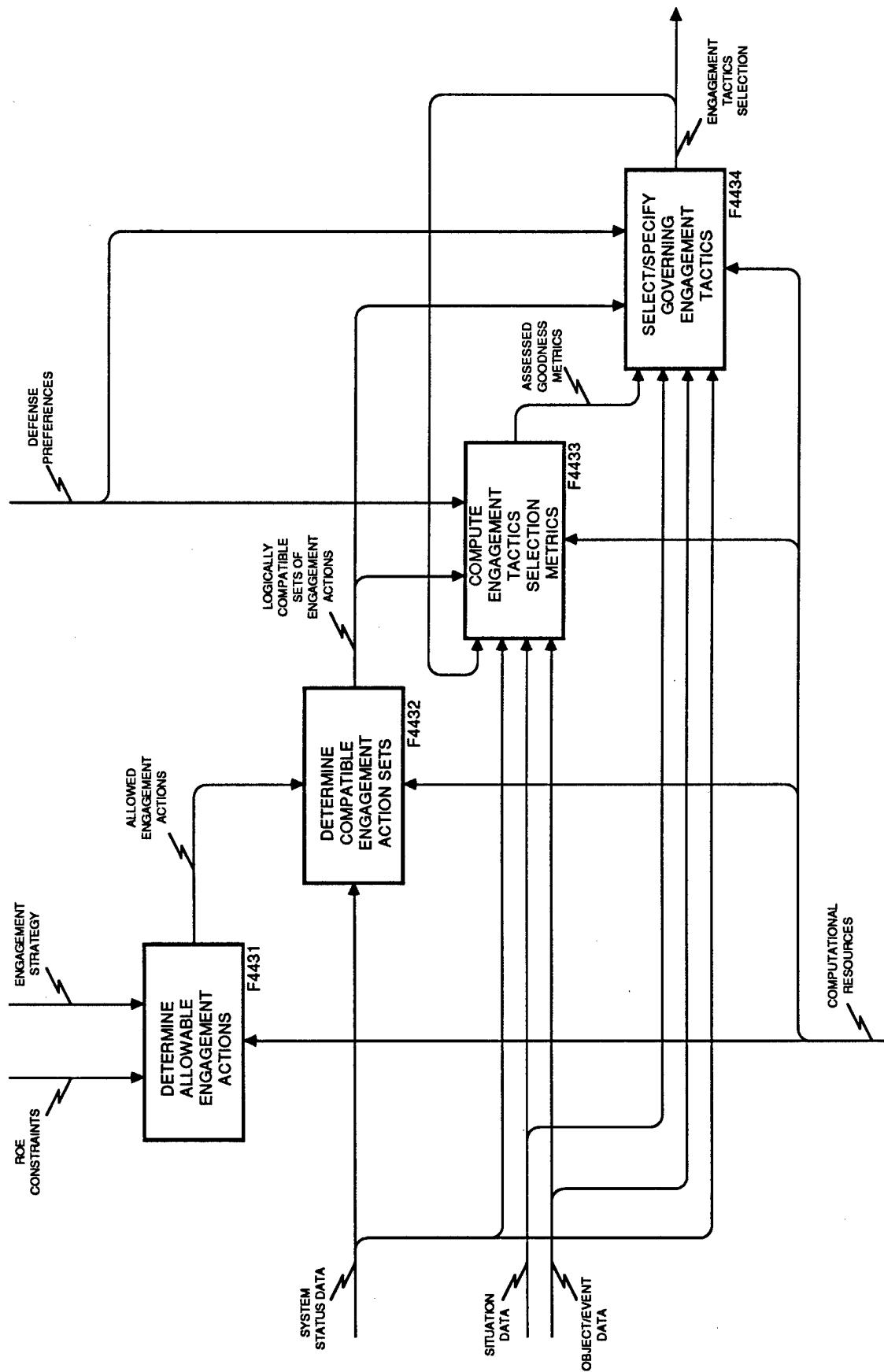
TITLE: IDENTIFY ROE-IMPOSED CONSTRAINTS

NODE: F441

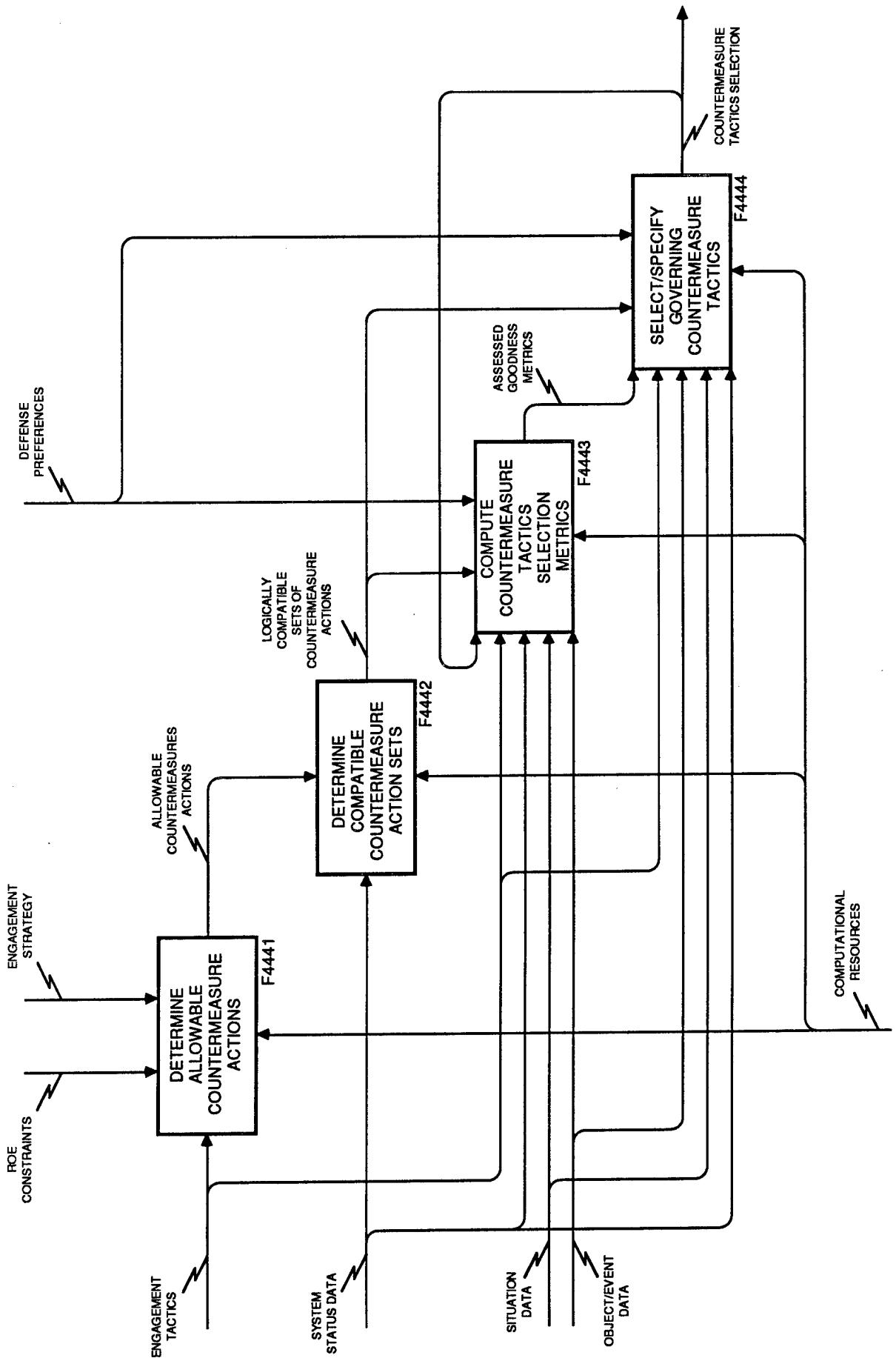


TITLE: SELECT STRATEGY OPTION

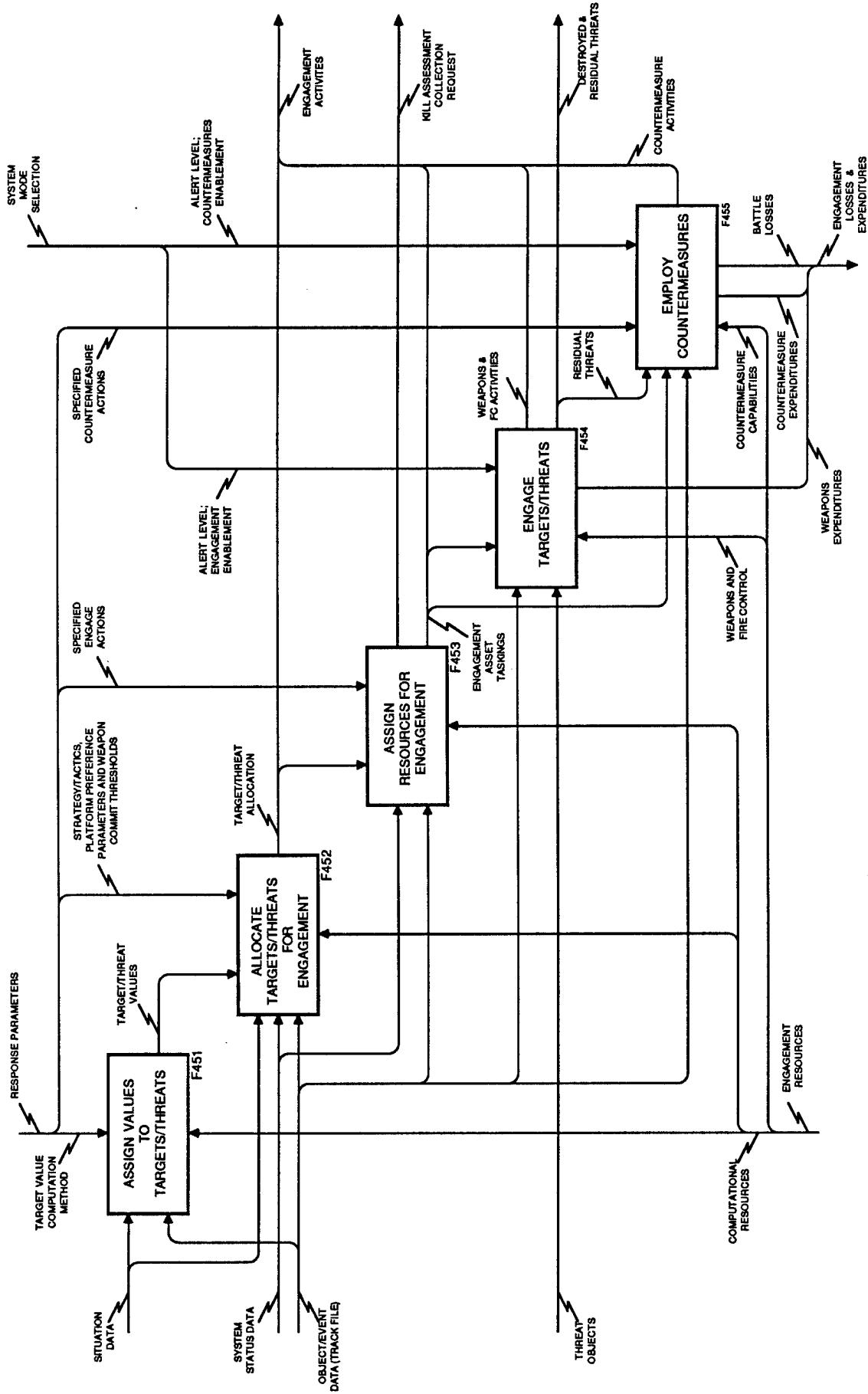
NODE: F442



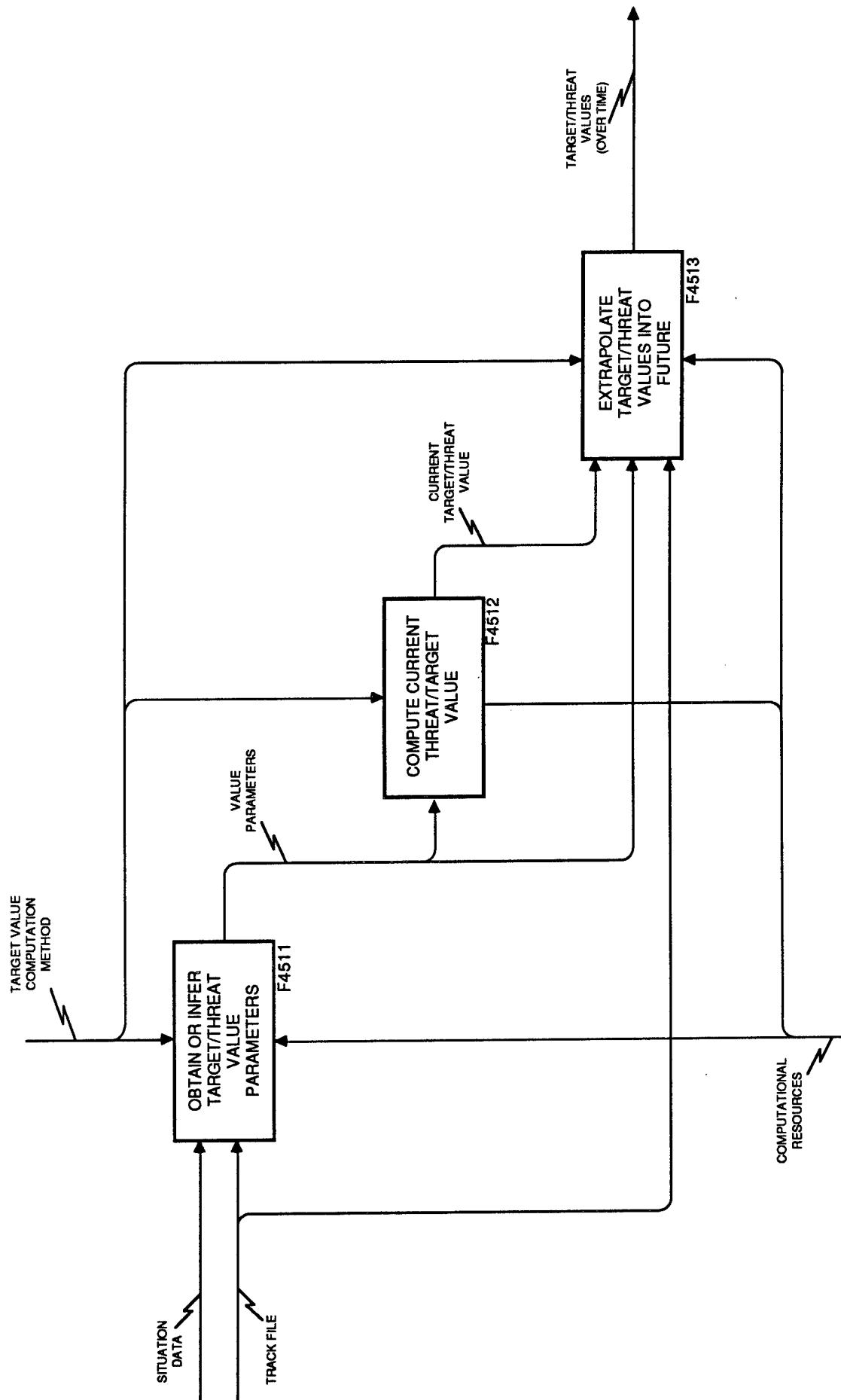
TITLE: SELECT ENGAGEMENT TACTICS
NODE: F443



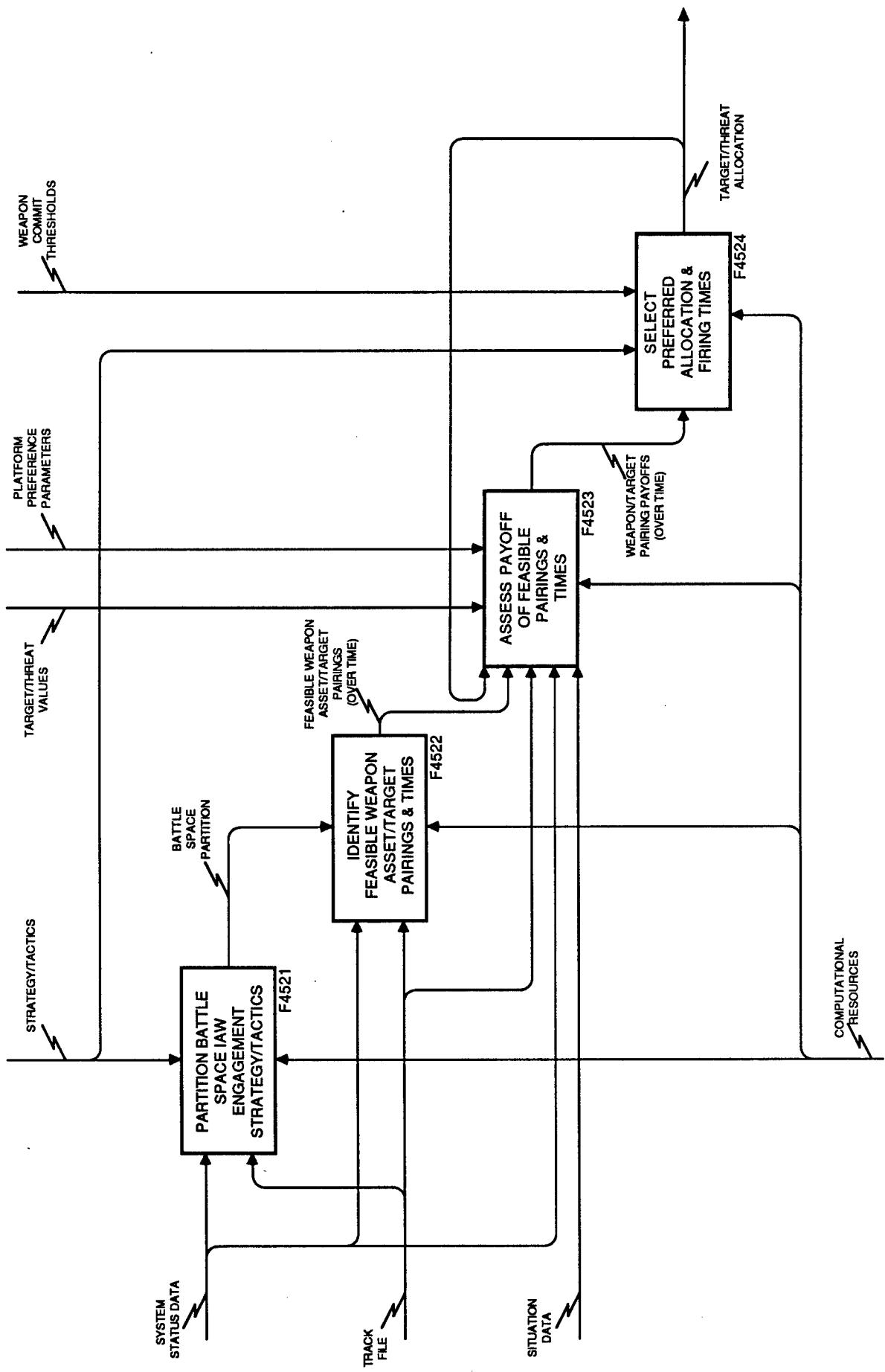
TITLE: SELECT COUNTERMEASURE TACTICS NODE: F444



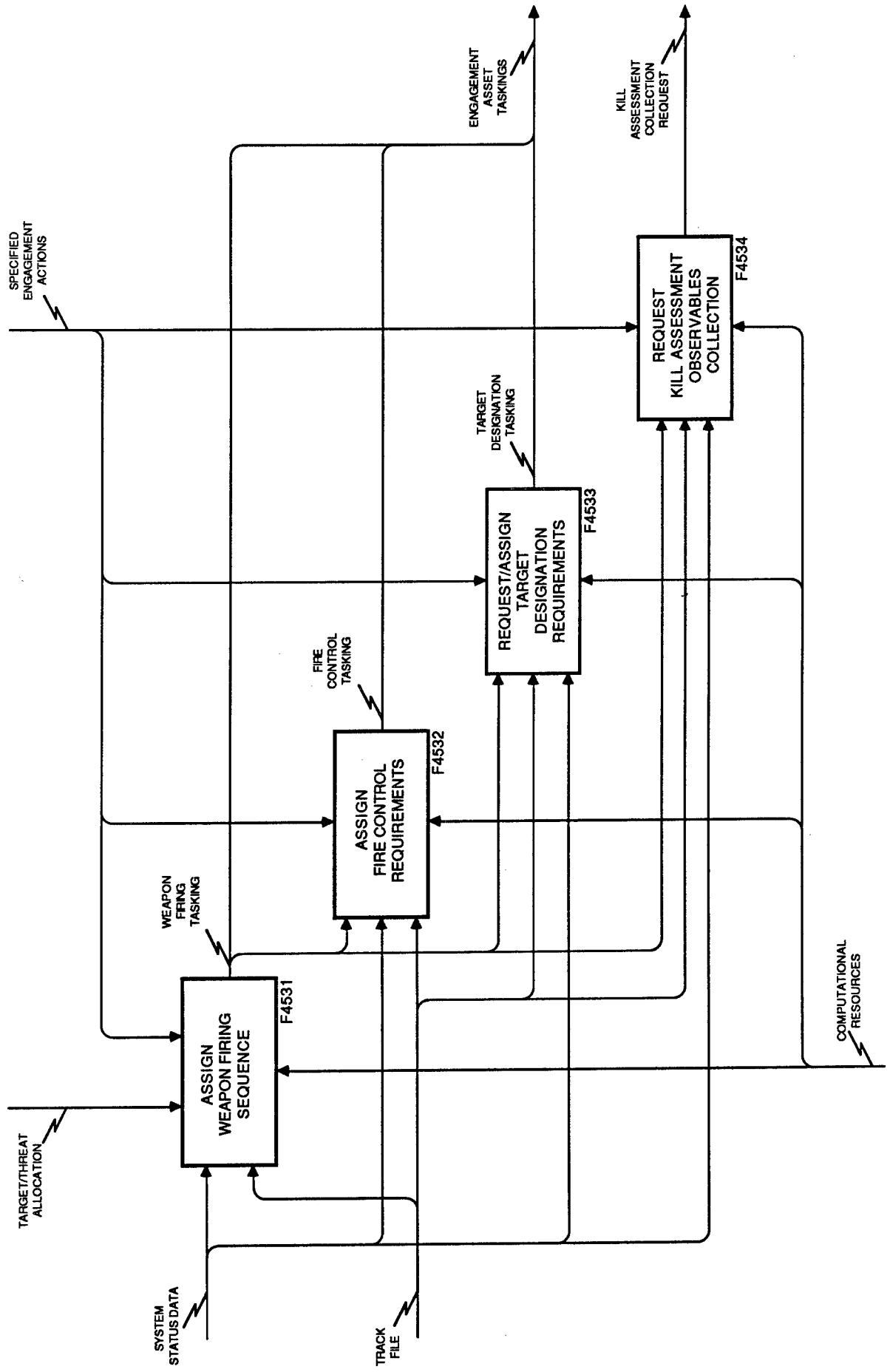
NODE: F45
TITLE: EXECUTE DEFENSIVE RESPONSE



TITLE: ASSIGN VALUES TO TARGETS/THREATS
NODE: F451

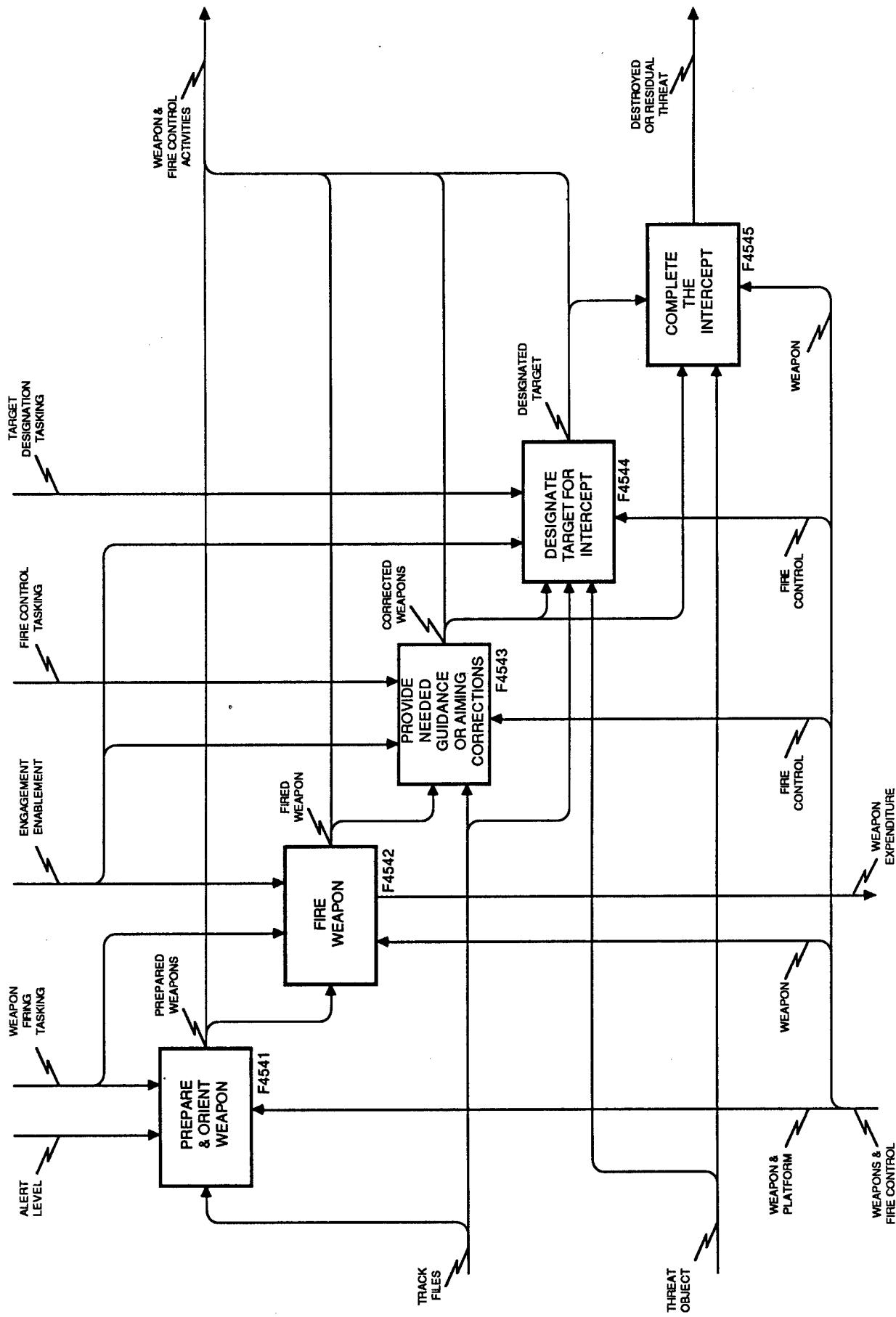


TITLE: ALLOCATE TARGETS/THREATS FOR ENGAGEMENT
NODE: F452

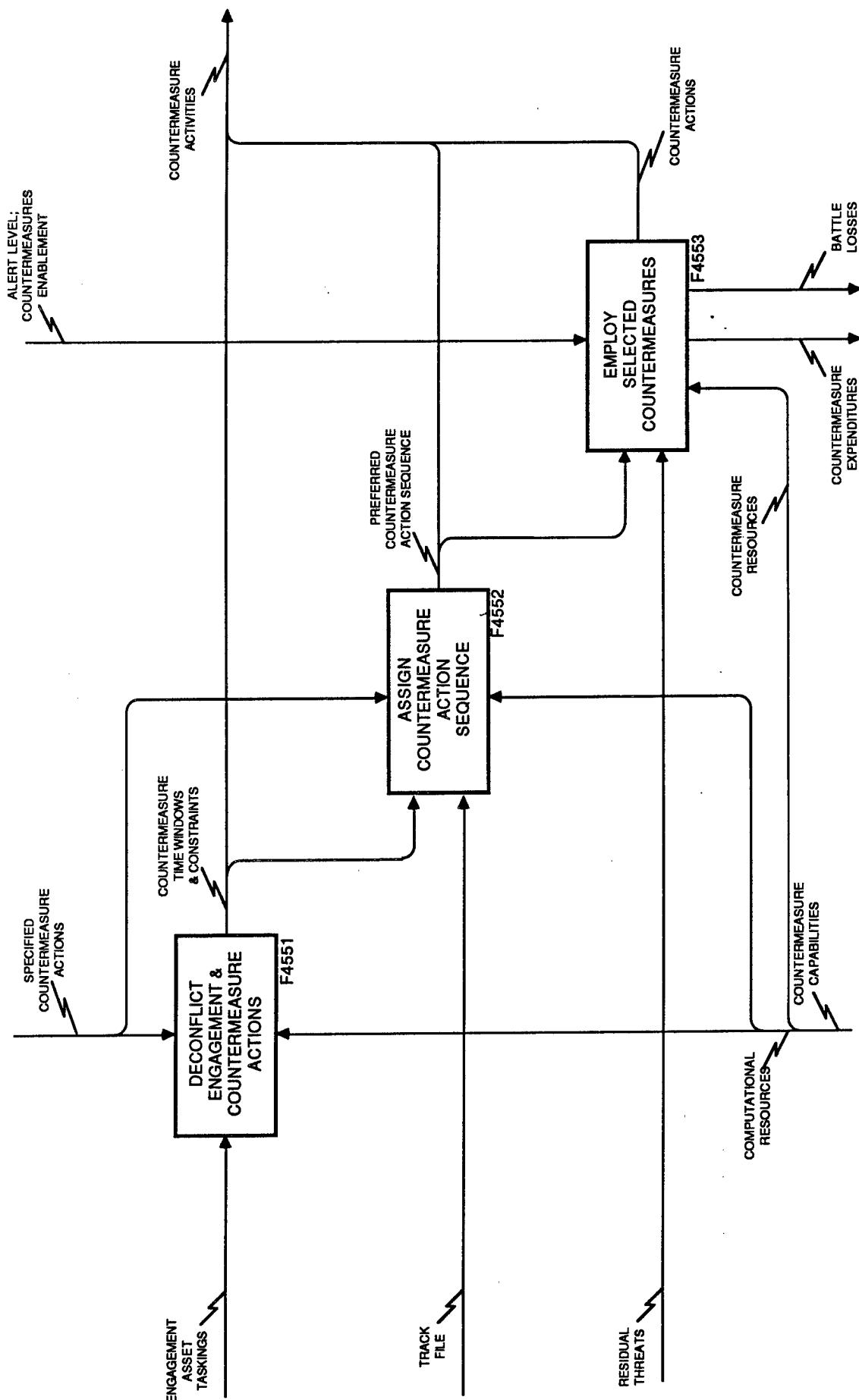


TITLE: ASSIGN RESOURCES FOR ENGAGEMENT

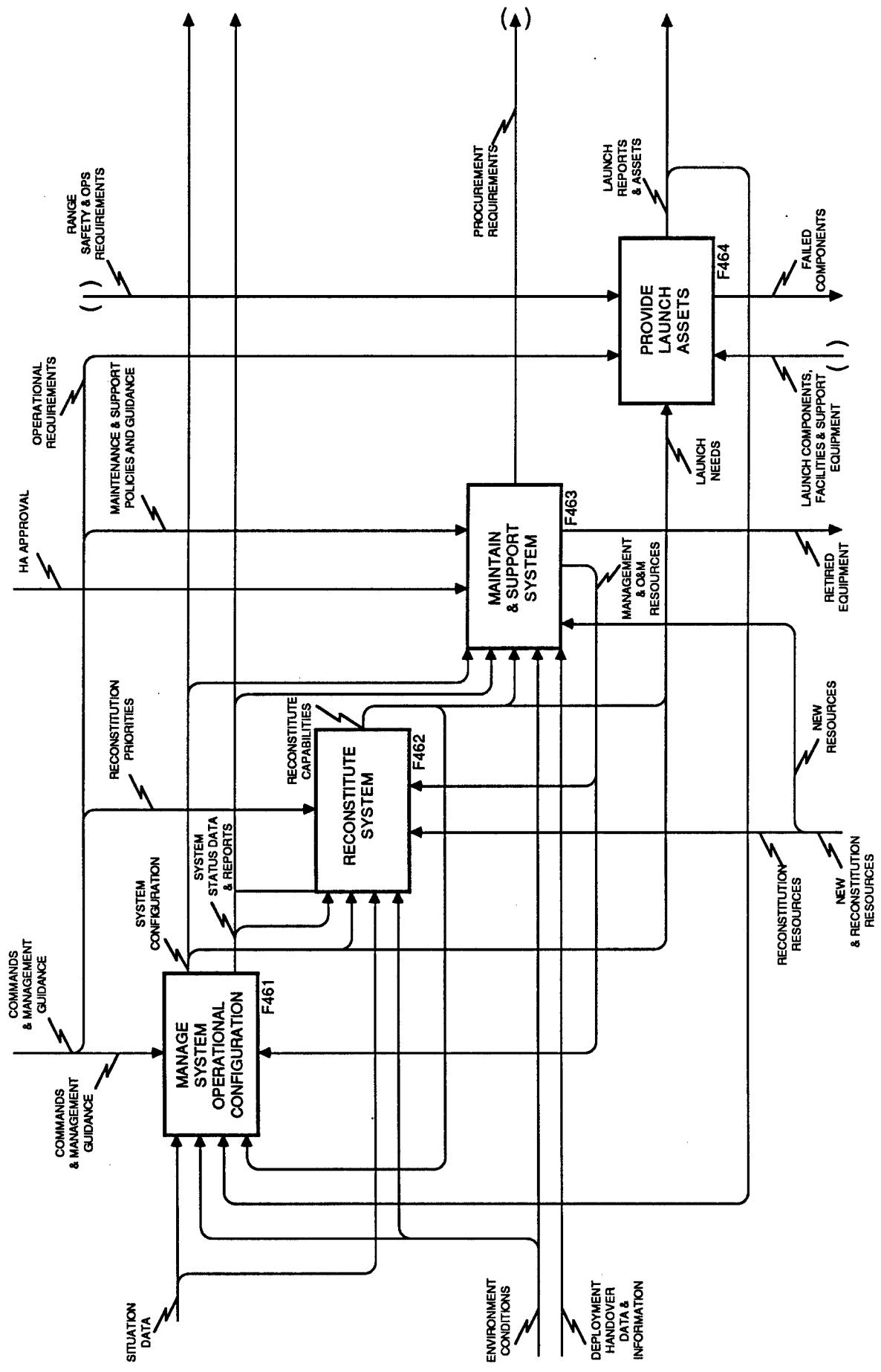
NODE: F453



NODE: F454
TITLE: ENGAGE TARGETS/THREATS

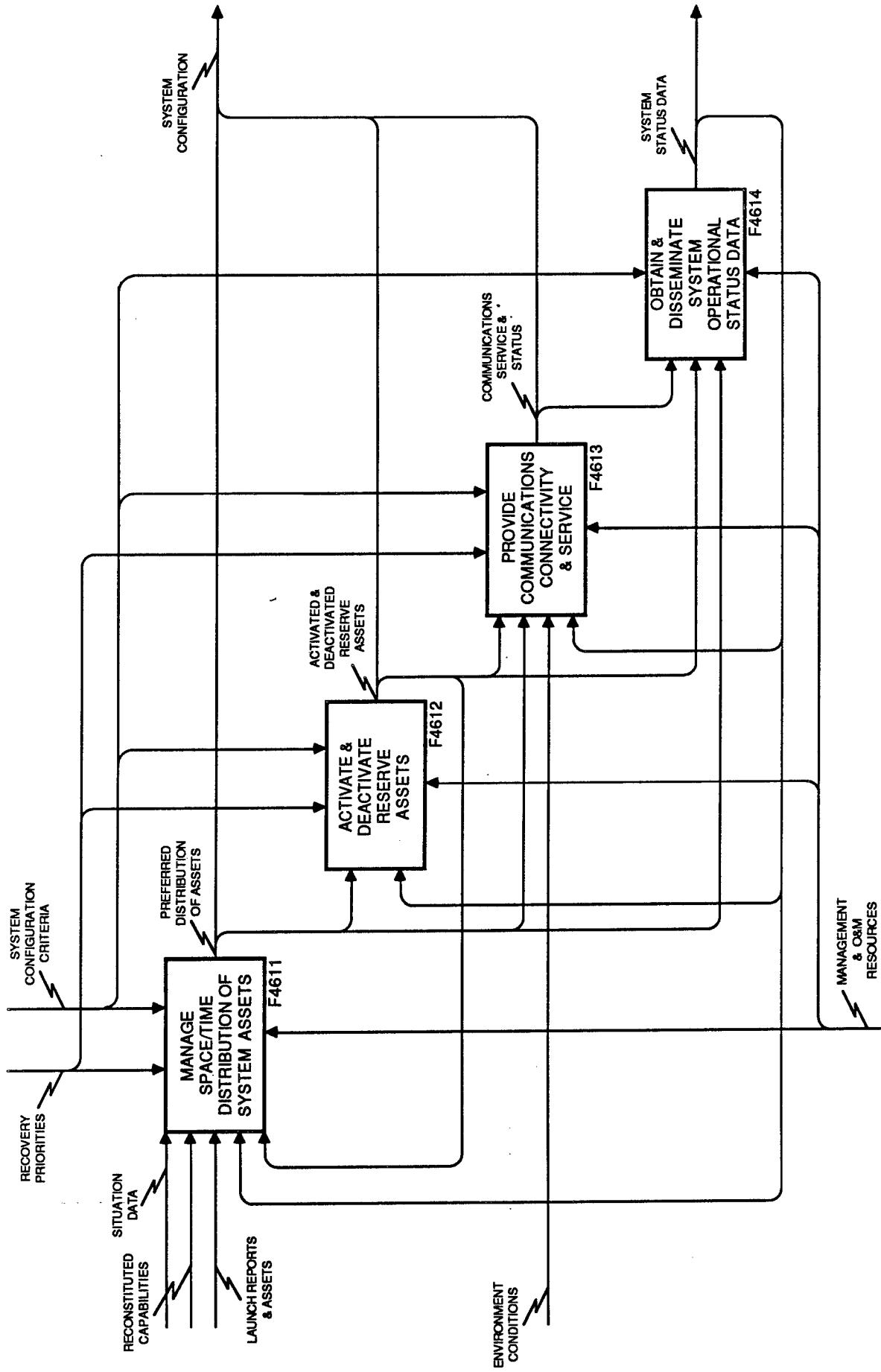


NODE: F455
TITLE: EMPLOY COUNTERMEASURES



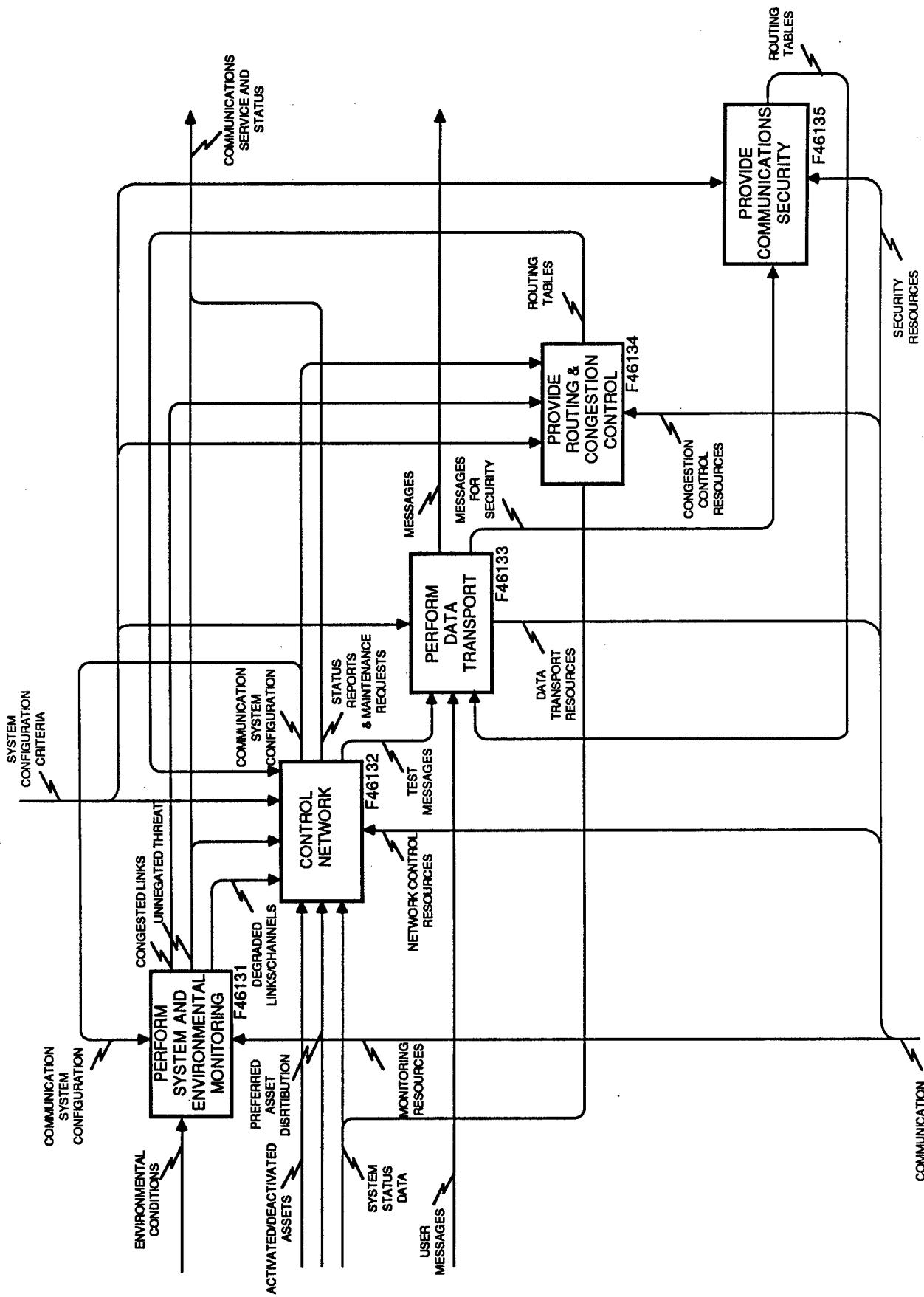
TITLE: MAINTAIN SYSTEM CAPABILITY

NODE: F46



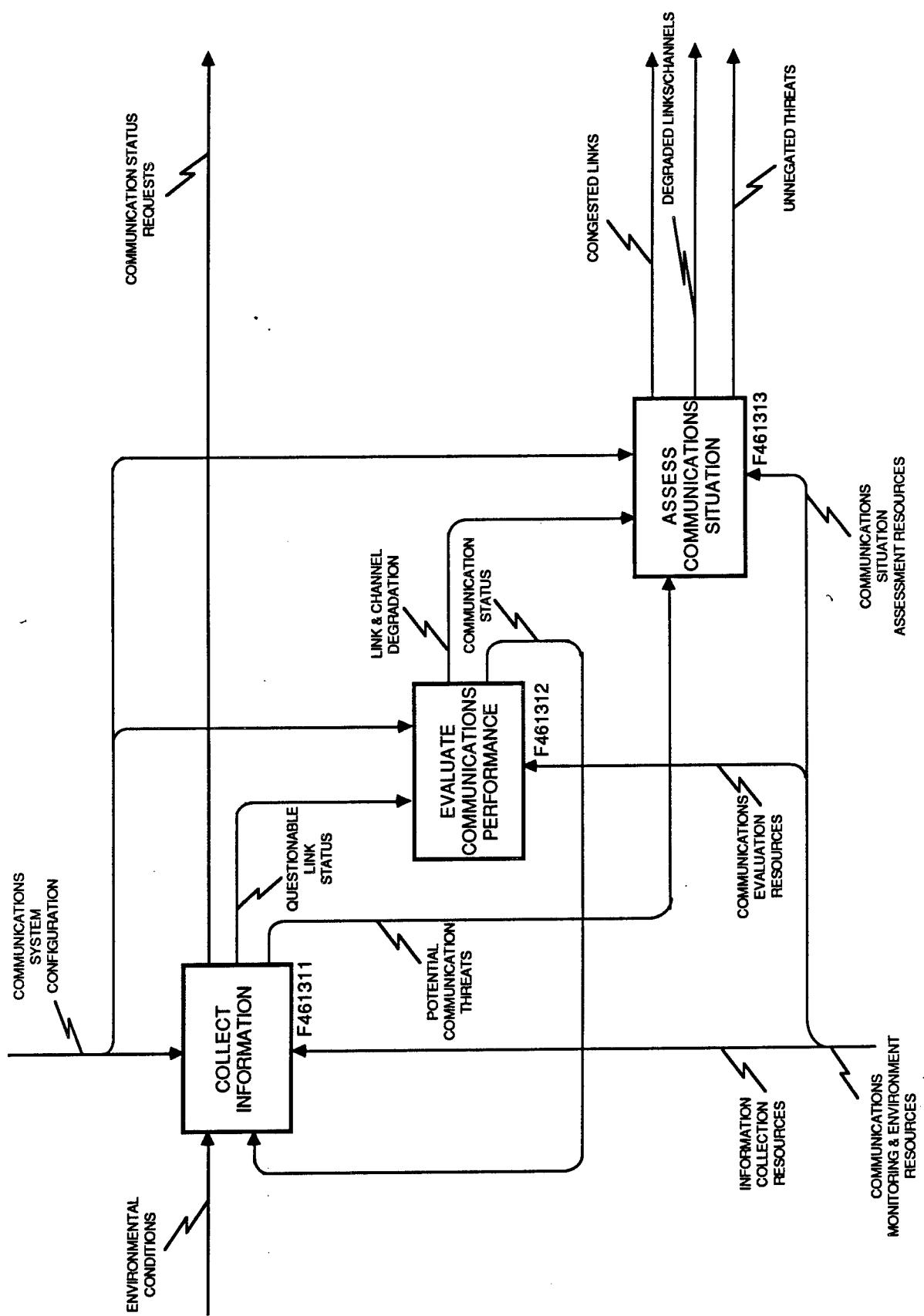
TITLE: MANAGE SYSTEM OPERATIONAL CONFIGURATION

NODE: F461

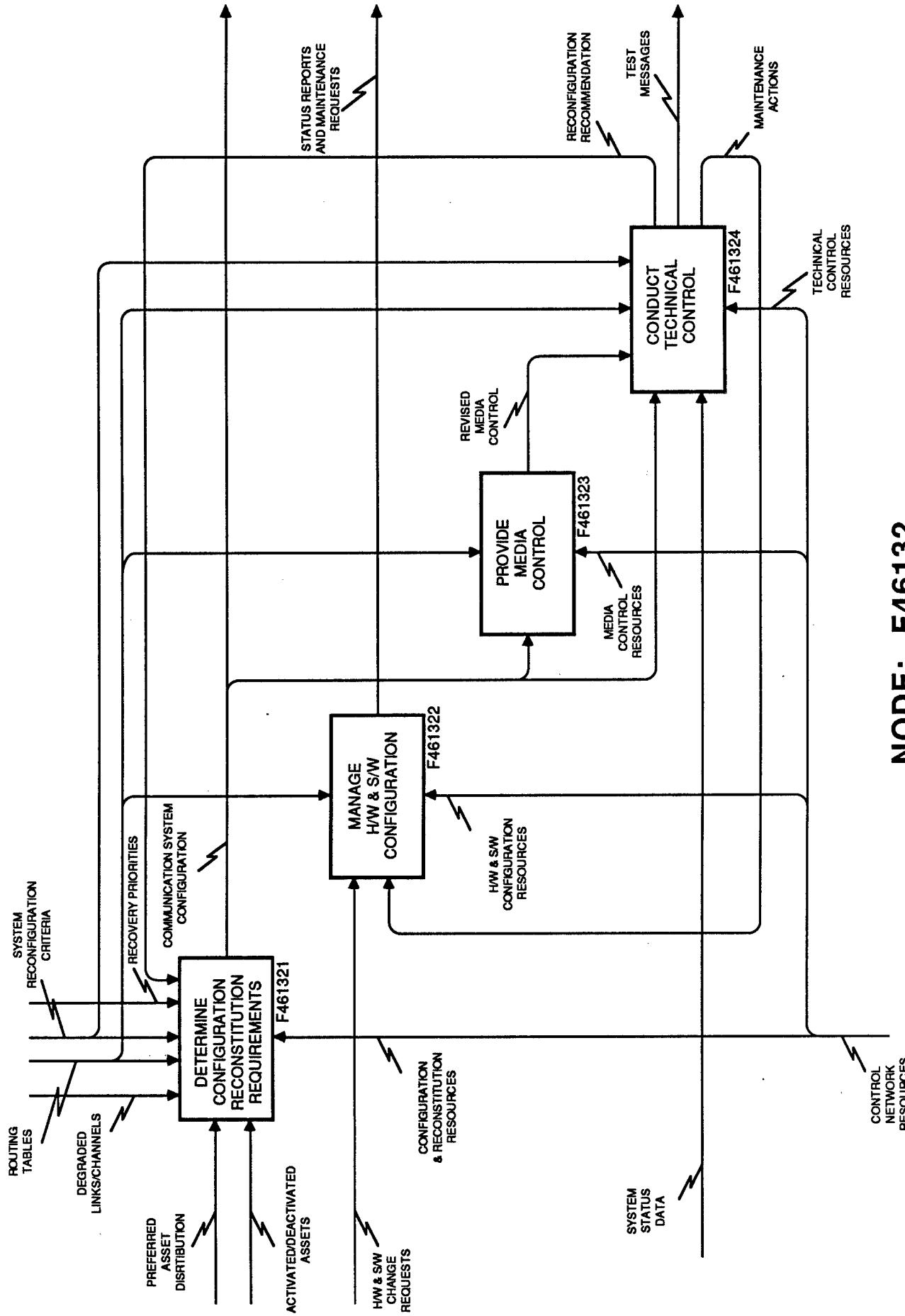


TITLE: PROVIDE COMMUNICATIONS CONNECTIVITY & SERVICE

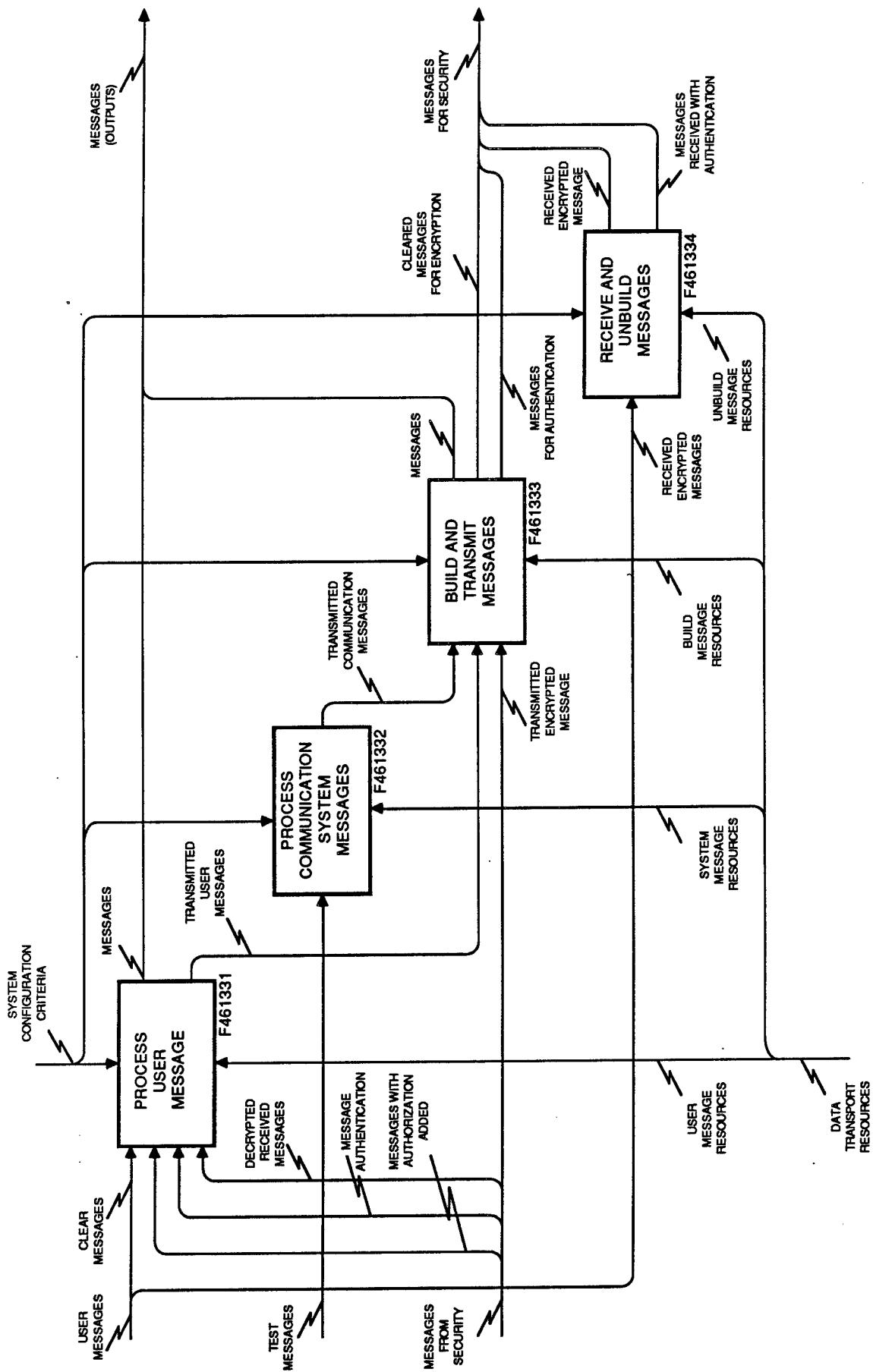
NODE: F4613



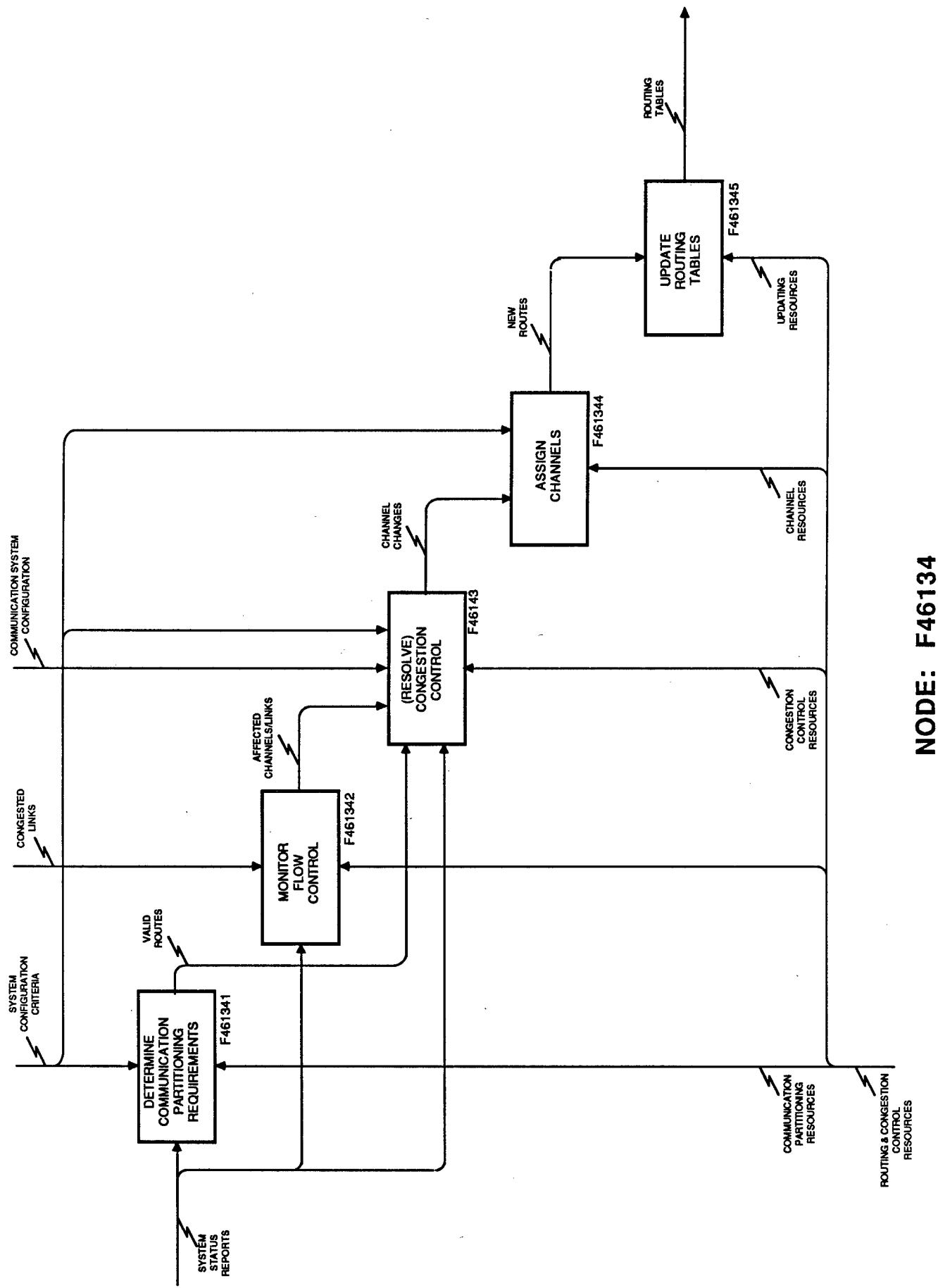
TITLE: PERFORM SYSTEM AND ENVIRONMENT MONITORING
NODE: F46131



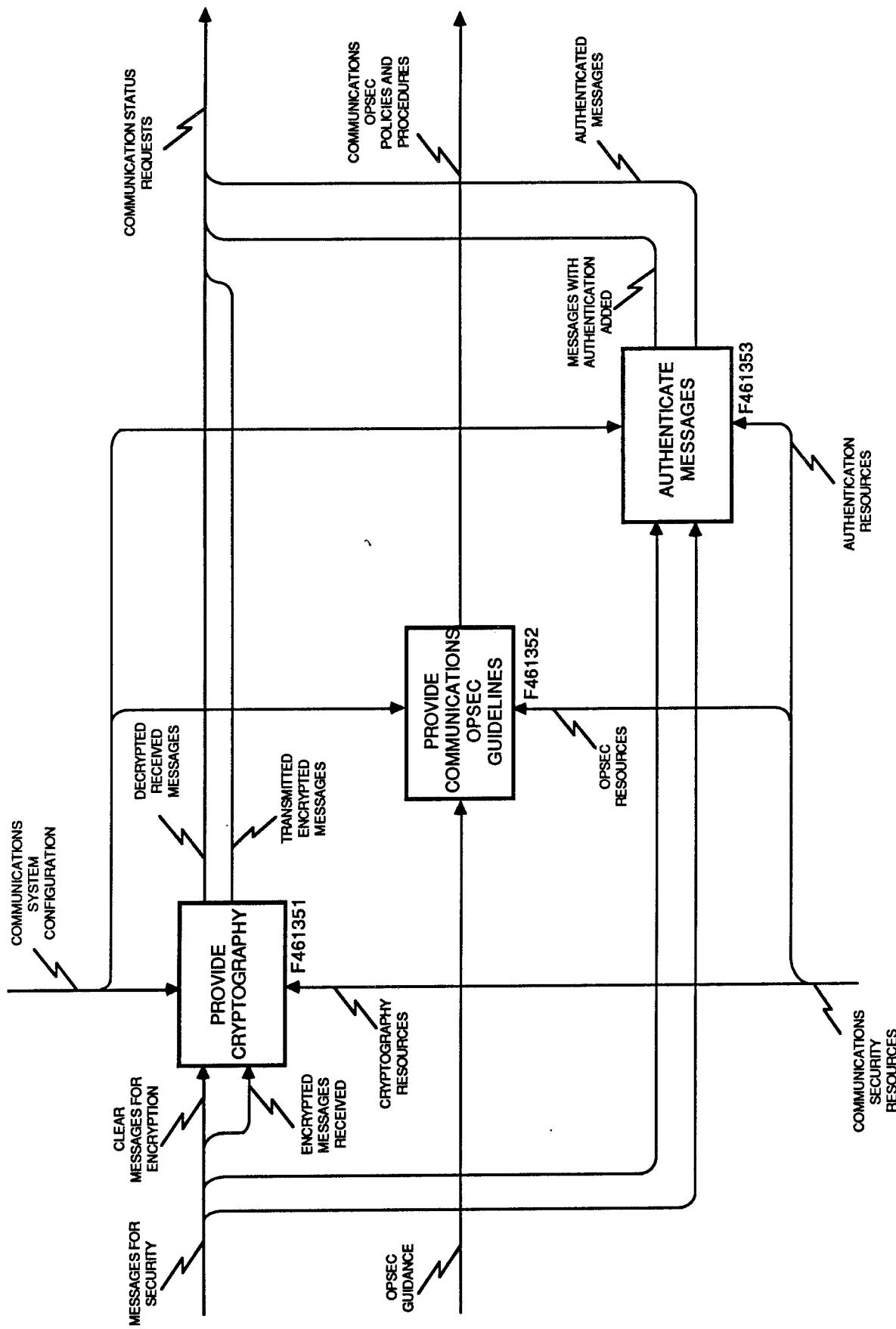
**TITLE: NODE: F46132
CONTROL NETWORK**



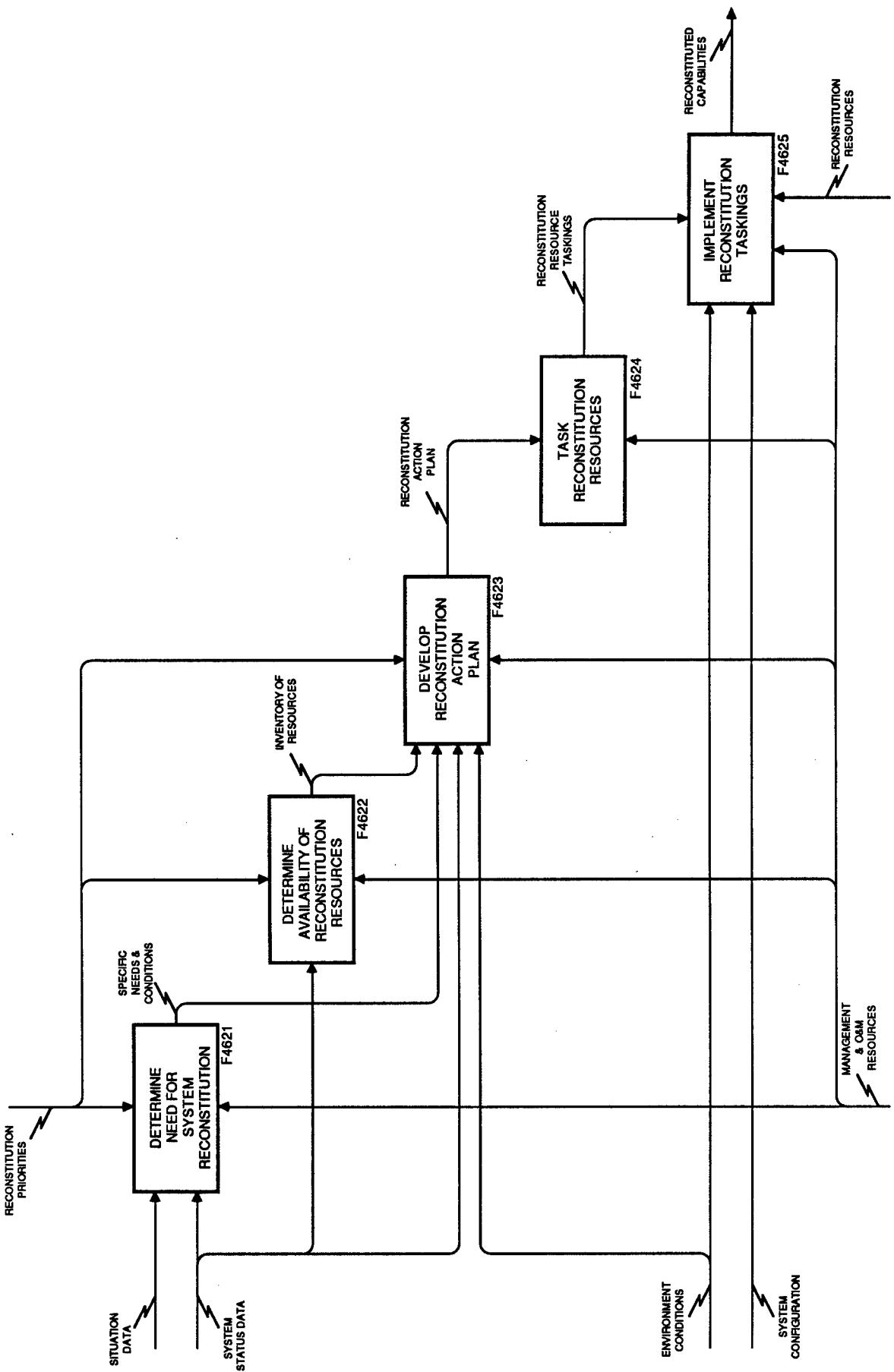
NODE: F46133
TITLE: PERFORM DATA TRANSPORT



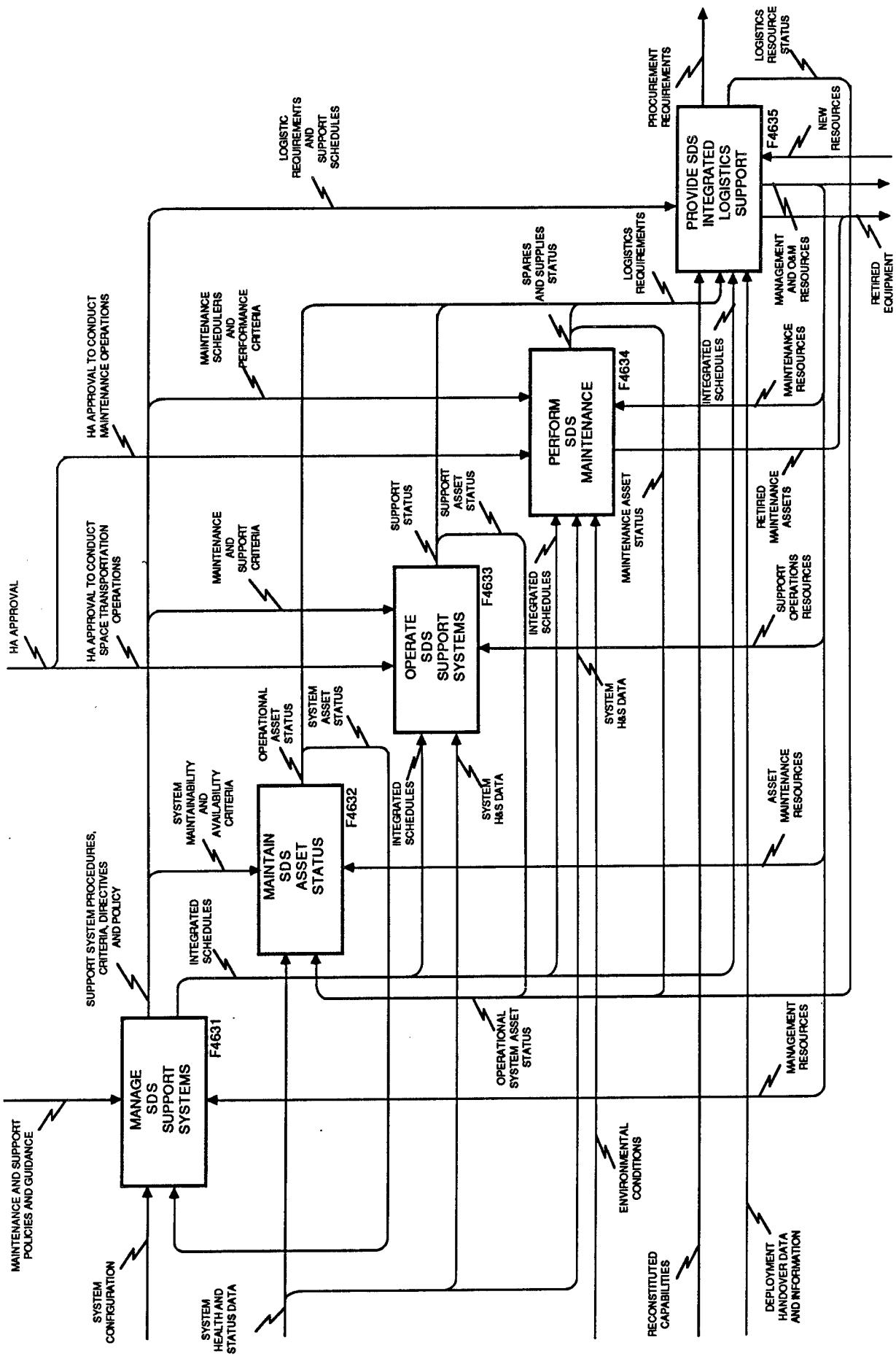
TITLE: PROVIDE ROUTING AND CONGESTION CONTROL
NODE: F46134



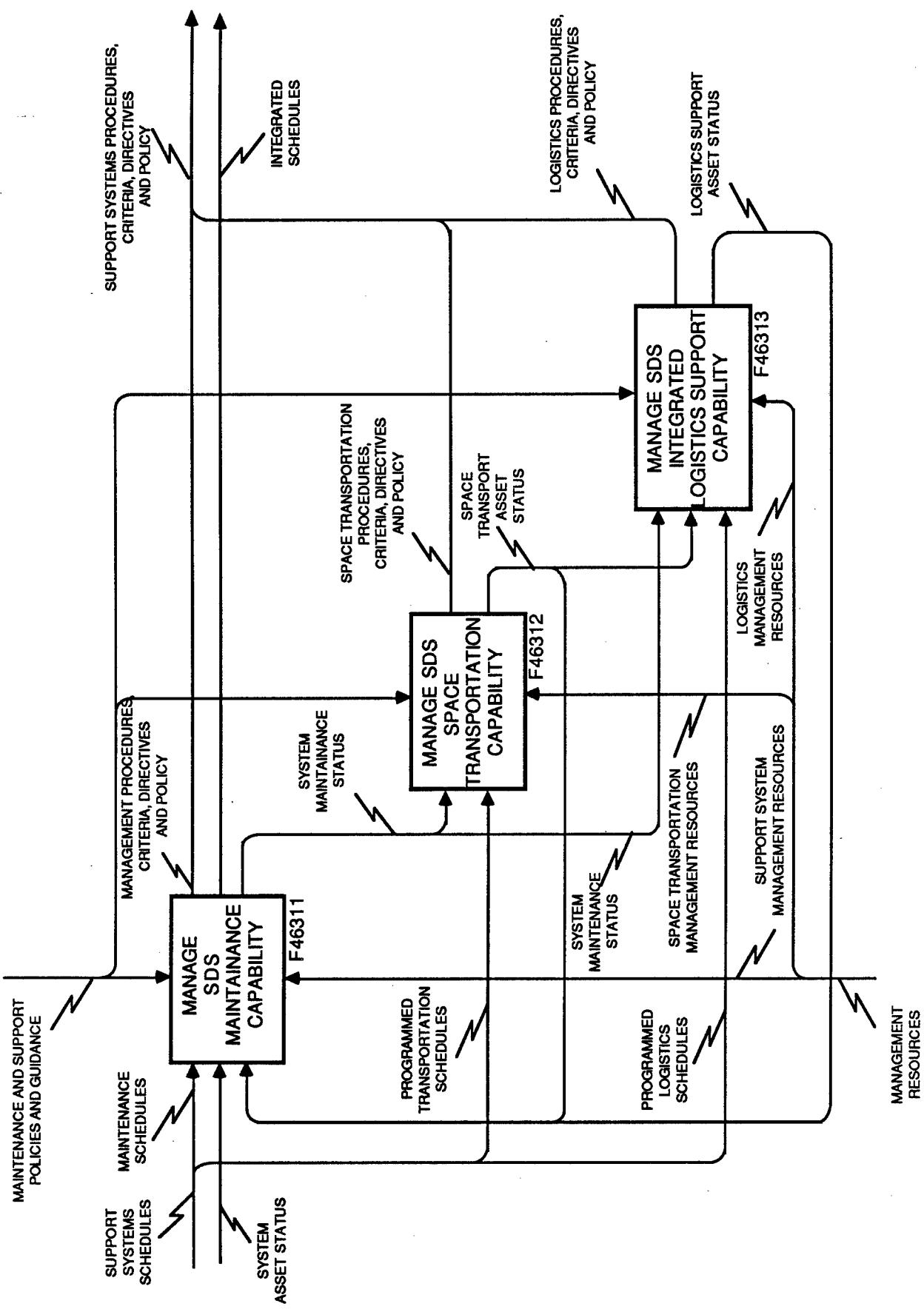
NODE: F46135
TITLE: PROVIDE COMMUNICATION SECURITY



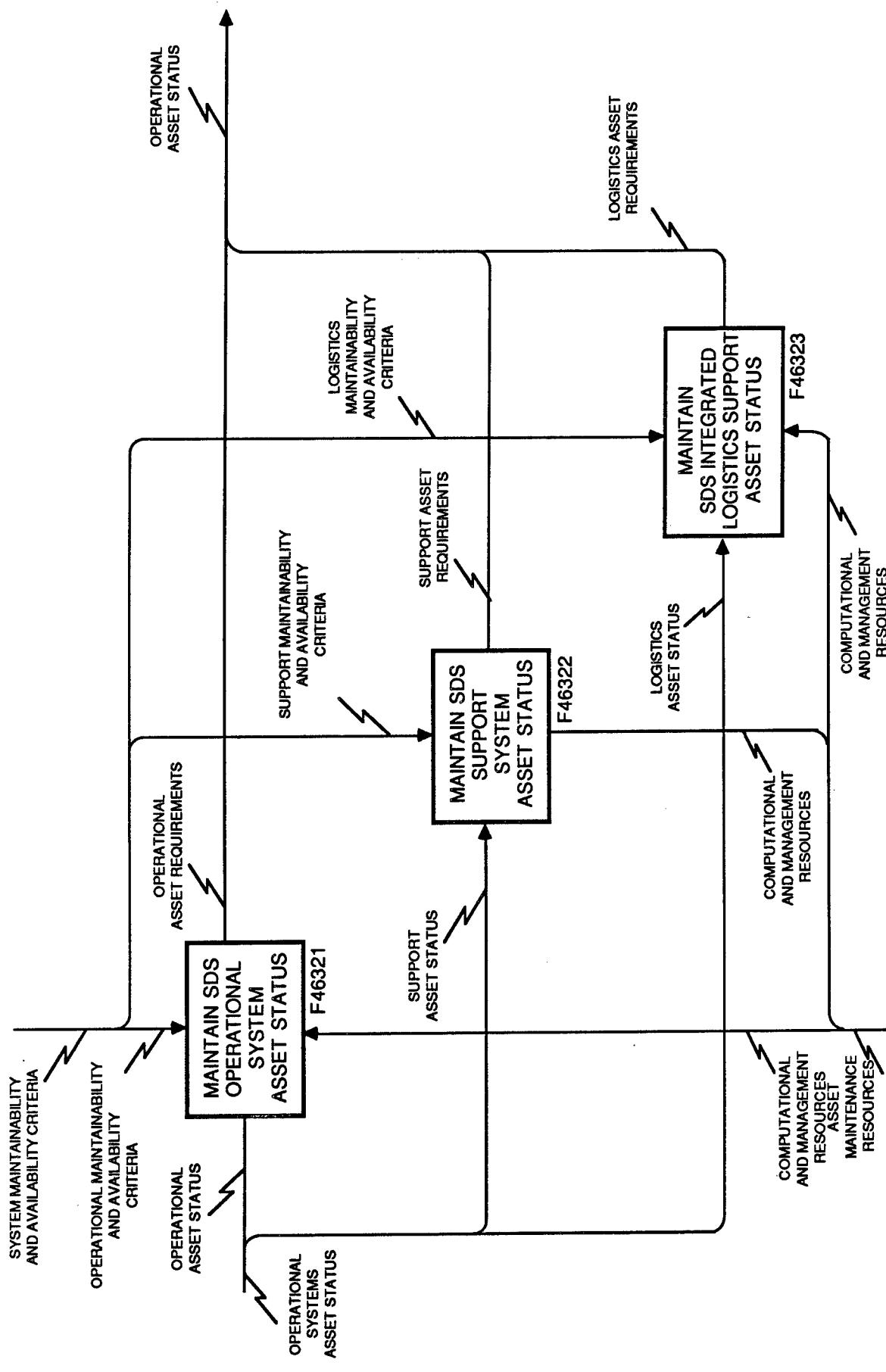
NODE: F462
TITLE: RECONSTITUTE SYSTEM



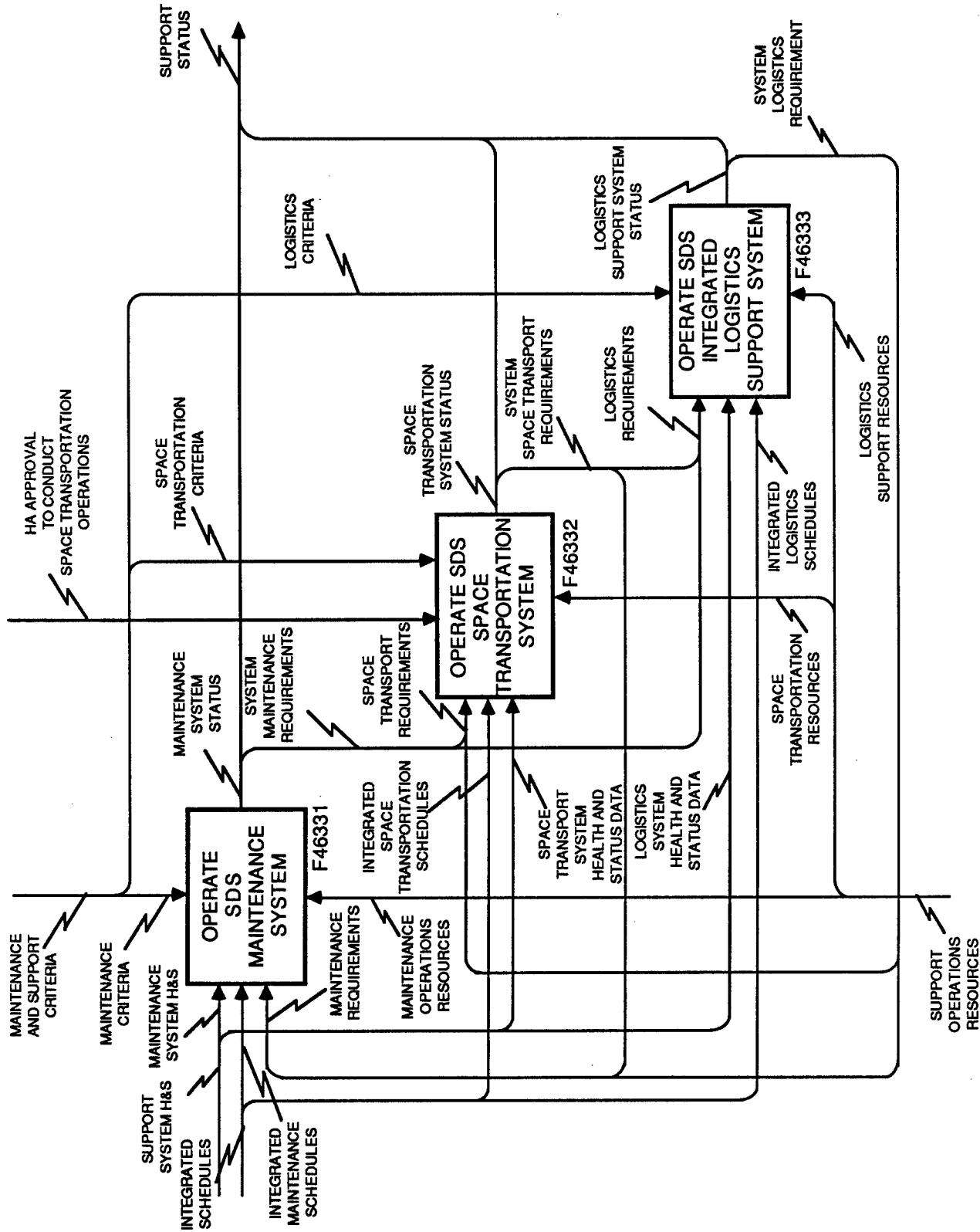
TITLE: SDS MAINTAIN AND SUPPORT THE SYSTEM
NODE: F463



NODE: F4631
TITLE: MANAGE SDS SUPPORT SYSTEMS

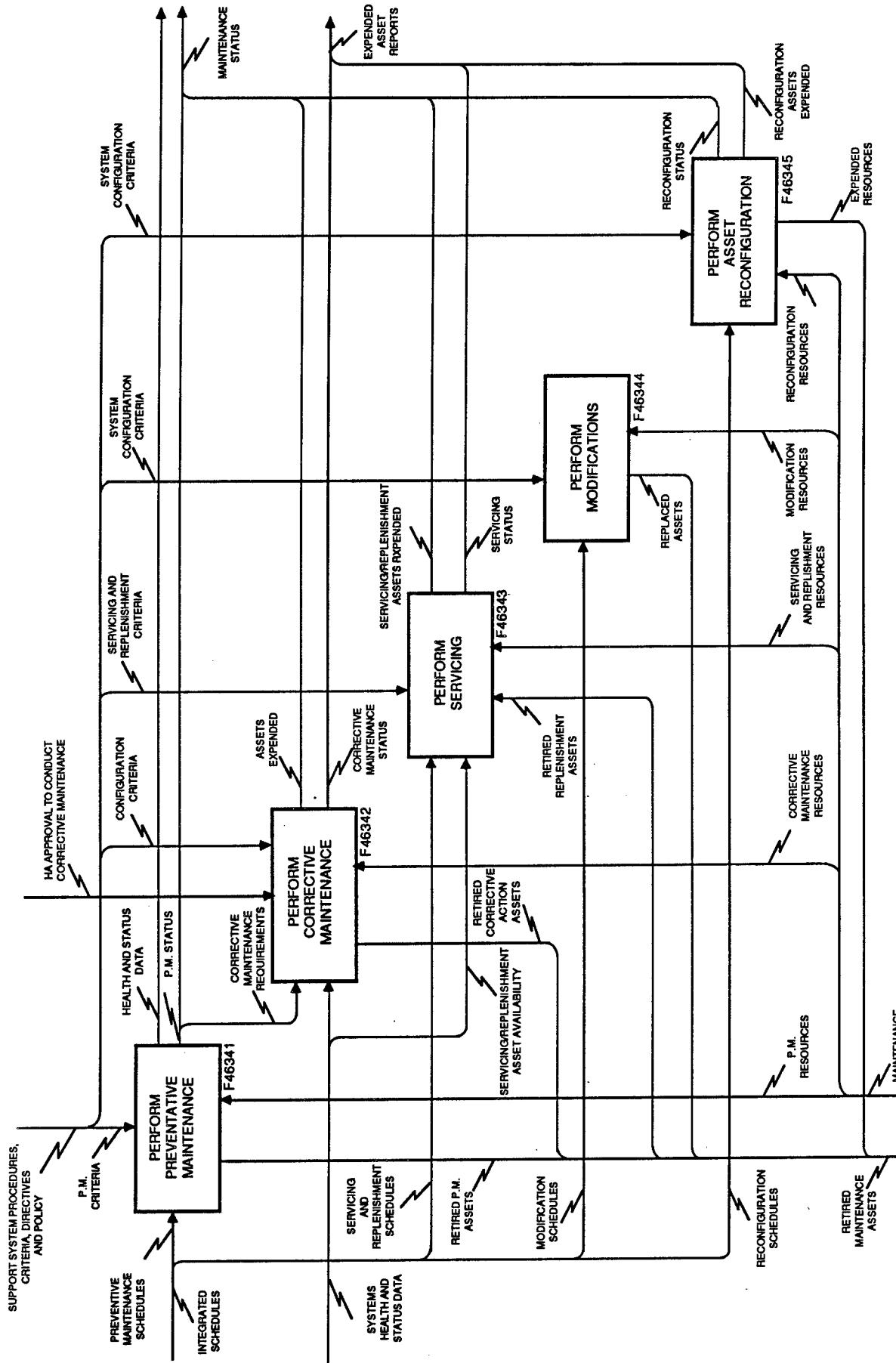


NODE: F4632
TITLE: MAINTAIN SDS ASSET STATUS



TITLE: OPERATE SDS SUPPORT SYSTEMS

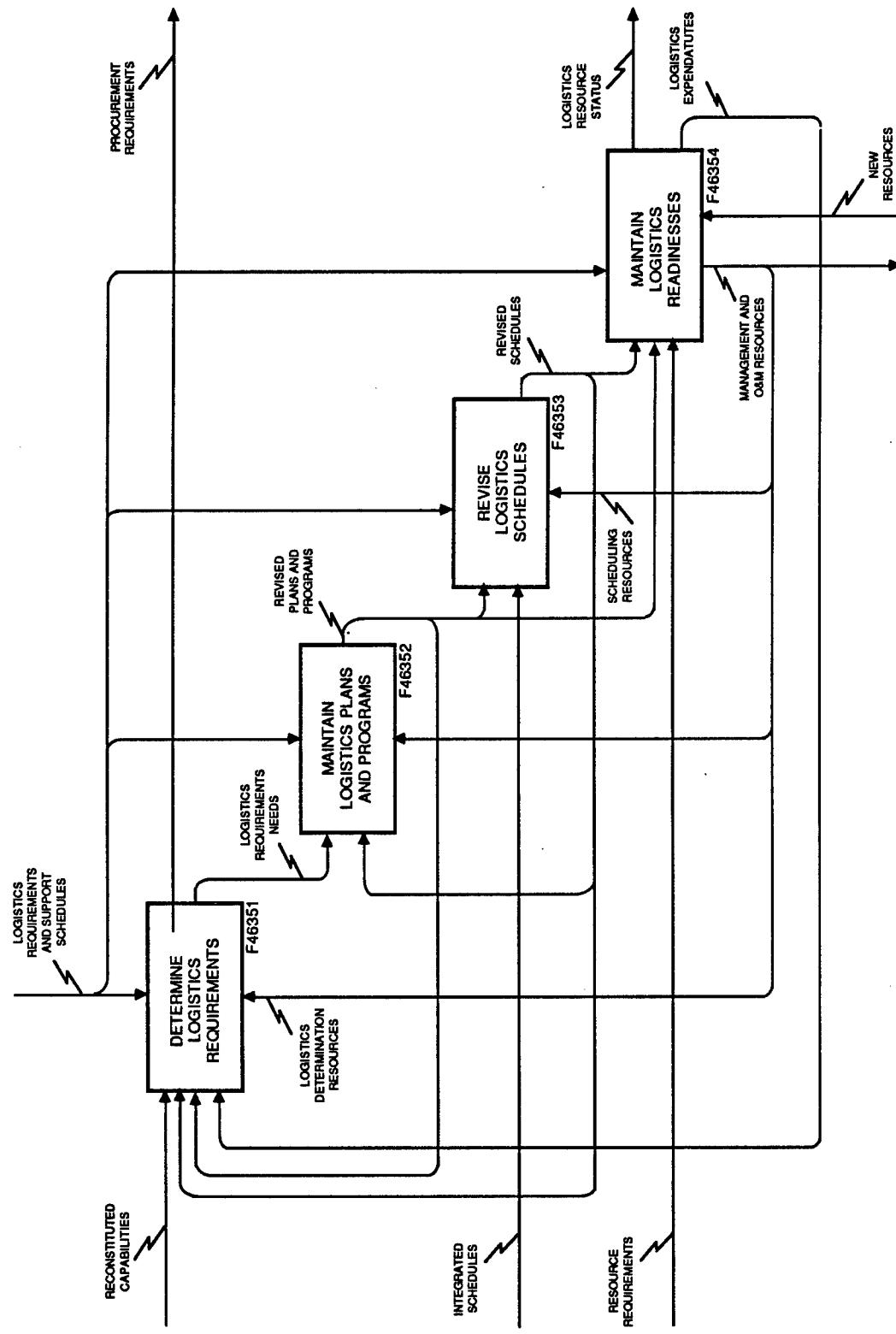
NODE: F4633

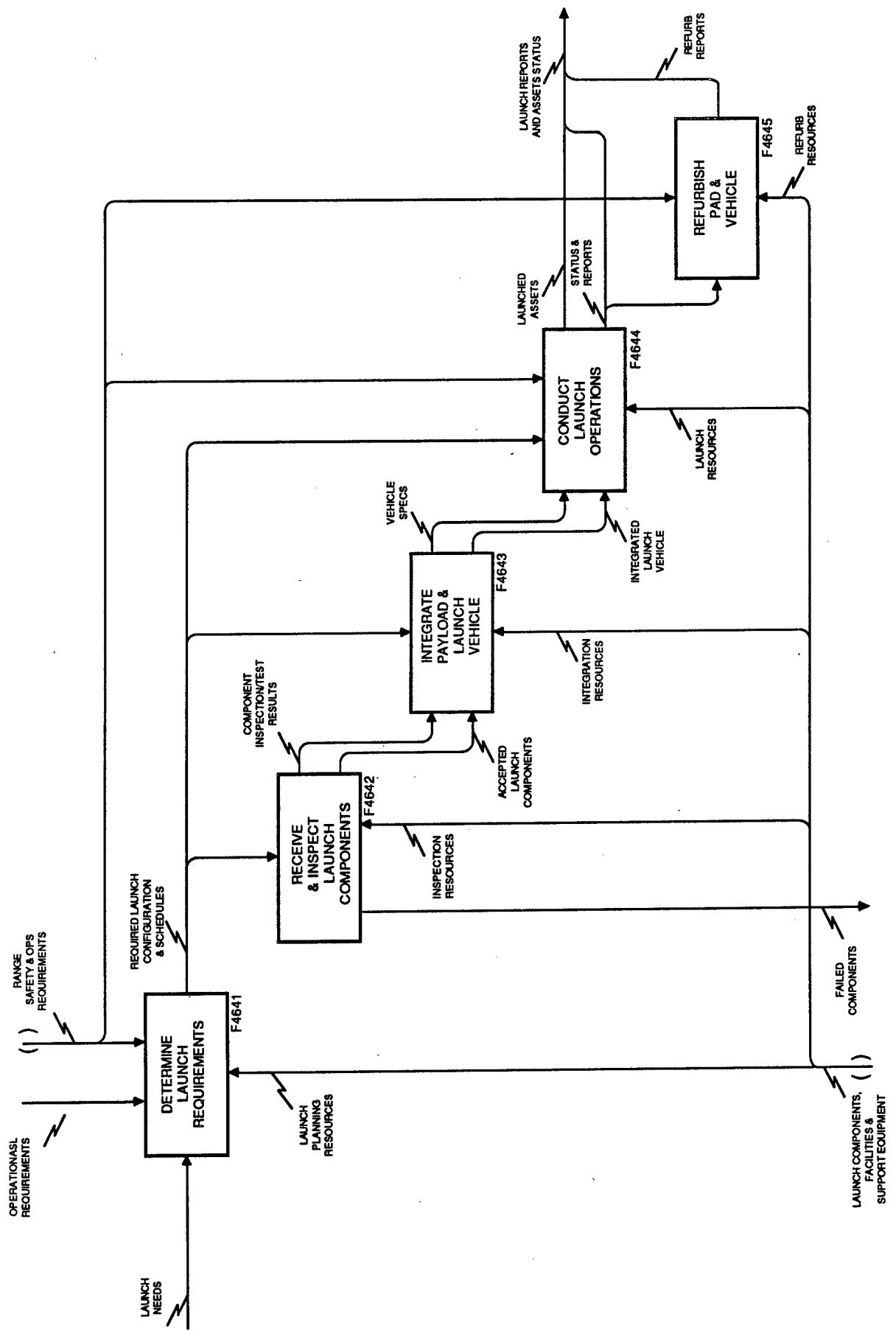


NODE: F4634
TITLE: PERFORM SDS MAINTENANCE

TITLE: PROVIDE INTEGRATED LOGISTICS SUPPORT

NODE: F4635





TITLE: PROVIDE LAUNCH ASSETS **NODE:** F464

SECTION II

FUNCTIONAL DESCRIPTIONS,

REQUIREMENTS AND IN/OUTPUT

INTRODUCTION TO SECTION II

This section is provides a generic description of each of the Strategic Defense System functions. Rockwell chose to use the structured functional model numbering system specified in the Integrated Computer Aided Manufacturing (ICAM) Program. This particular number sequence has provided Rockwell the vehicle to: (1) show the relationship among functions and requirements, (2) group functions into general categories i.e. Command and Control, Battle Management, etc., (3) show relationships of functions to requirements, and (4) provide the means to trace a requirement back to its governing function. A description of the format used in this document is provided below.

INPUT	(Function Number-Function Title) F41 - CONTROL THE SYSTEM	OUTPUT (A listing of Outputs Controls and Mechanisms resulting from the operations of this function)
(A listing of Inputs, Controls and Mechanisms operating on this function)	Description: (A general description of the purpose of the function) Number Requirement Description F41-1 (A description of a requirement derived from this function) (The first requirement derived from this function)	

Note: The traceability of inputs/outputs to functions is not specified in this document. This traceability was not accomplished during this effort, but a suggested numbering traceability sequence is provided below.

- Data/Information Input F41-DI 2 - First Data Input to function F41
- Control Input F41-CI 3 - Third Control Input to F41
- Mechanism Input F41-MI 3 - Third Mechanism Input to F41
- Control Output F41-CO3 - Second Control Output from F42
- Data/Information Output F41-DO5 - Fifth Data Output from F41
- Mechanism Output F41-MO1 - First Mechanism Output from F41

STRATEGIC DEFENSE SYSTEM

**FUNCTIONAL DESCRIPTIONS
REQUIREMENTS AND INPUT/OUT
(THE STRATEGIC DEFENSE SYSTEM)**

INPUT	FO - PROVIDE STRATEGIC BALLISTIC MISSILE DEFENSE	Description: This highest level function encompasses all activities, processes, and means to provide active strategic ballistic missile defense of the United States and its Allies. It includes the high level functions of developing the Strategic Defense System (SDS), producing the SDS, deploying the SDS, employing the SDS, and, when appropriate, decommissioning the SDS.	OUTPUT												
<p>1) National Security Policy</p> <p>2) Military Strategy</p> <p>3) SDS Missions</p> <p>4) Direction And Guidance From Higher Authority</p> <p>5) Decisions To Develop And Deploy The SDS</p> <p>6) Decision To Decommission The SDS</p> <p>7) Intelligence Information</p> <p>8) Friendly Force Information</p> <p>9) Ballistic Missile And Defense Suppression Threats</p> <p>10) Environment</p>	<table border="1"> <thead> <tr> <th data-bbox="535 1051 567 1389">#</th><th data-bbox="535 1389 567 1928">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="584 1051 616 1389">F0-1</td><td data-bbox="584 1389 616 1928">SDS Development Resources</td></tr> <tr> <td data-bbox="633 1051 665 1389">F0-2</td><td data-bbox="633 1389 665 1928">SDS Production Resources</td></tr> <tr> <td data-bbox="682 1051 714 1389">F0-3</td><td data-bbox="682 1389 714 1928">SDS Deployment Resources</td></tr> <tr> <td data-bbox="731 1051 763 1389">F0-4</td><td data-bbox="731 1389 763 1928">SDS Employment Resource</td></tr> <tr> <td data-bbox="780 1051 812 1389">F0-5</td><td data-bbox="780 1389 812 1928">SDS Decommissioning Resources</td></tr> </tbody> </table>	#	Requirement Description	F0-1	SDS Development Resources	F0-2	SDS Production Resources	F0-3	SDS Deployment Resources	F0-4	SDS Employment Resource	F0-5	SDS Decommissioning Resources	<p>1) Satisfaction Of National Security Policy And Military Strategy Requirements In The Strategic Ballistic Missile Defense Mission Area</p> <p>2) Support Of Collateral And External Mission Areas</p>	
#	Requirement Description														
F0-1	SDS Development Resources														
F0-2	SDS Production Resources														
F0-3	SDS Deployment Resources														
F0-4	SDS Employment Resource														
F0-5	SDS Decommissioning Resources														

STRATEGIC DEFENSE SYSTEM

**FUNCTIONAL DESCRIPTIONS
REQUIREMENTS AND INPUT/OUTPUT
(DEPLOYMENT)**

INPUT

- 1) Declaration Of SDS Milestone III
- 2) Policy, Missions, And Direction From HA
- 3) Plans & Schedules
- 4) Threat Objects And Events
- 5) Facilities and Technical Designs
- 6) SDS Deployment Resources
- 7) Intel/Friendly Force Reports
- 8) Environments

F3 - DEPLOY SDS

Description: This function encompasses all the activities of the deployment phase of the SDS to include the acceptance and evaluation of resources from manufacturers/vendors; the testing of systems and components prior to integration into larger sections of the SDS; the integration of systems into elements and the integration of elements into the overall SDS. This function encompasses the maintenance of SDS configuration plans, changes to these plans, the evaluation of and testing of SDS standards, concepts, policies, etc. which will eventually be integrated into the SDS and the training of personnel which will be responsible for operating, maintaining and supporting the SDS.

#	Requirement Description
F3-1	Deployment Assets
F3-2	Deployment Self Defense Policy
F3-3	Deployment Facilities
F3-4	Training Facilities and Standards
F3-5	Deployment Standards and Policies
F3-6	System Configuration Controls
F3-7	Self Defense Assets
F3-8	Manufacturing Schedules

OUTPUT

- 1) Recommendations To HA
- 2) Changes & Reports
- 3) Impact Assessment Data
- 4) Operational Readiness Status
- 5) Warning & Assessment Reports
- 6) Battle Losses & Expenditures
- 7) System Handover To SDS
- 8) Self Defense System Status
- 9) Residual Threat

INPUT	OUTPUT
F31 - PROVIDE SDS DEPLOYMENT PROTECTION	
<p>1) Policy Mission Rules & Direction From HA 2) Plans & Procedures 3) External Environment Including The Enemy Defense Suppression Threat (Postulated For Planning And Actual For Operations) 4) Resources Required To Perform The Protection - Initially Including SPACETRACK, SPADOR, ALASAT, INTEL, And Other External Applicable Assets. 5) Schedules & Revisions 6) Intelligence & Warning Information To Include Status Of Friendly Forces 7) Declaration Of MS III 8) Threat Object & Events</p>	<p>Description: This function encompasses the planning and operation of the command and control, surveillance, situation assessment, defensive response selection, and defensive response execution activities required for the protection of the SDS beginning with the deployment of the initial SDS asset and concluding with the final validation of SDS Initial Operational Capability (IOC). For those SDS protection activities required which must be performed externally to the SDS, this function will provide the planning, command and control, situation assessment, and operational tasking for those external activities.</p>
<p>1) Recommended Actions To Higher Authority (Depending On Roles For Applicable IOC) 2) Warning And Assessment Reports To Higher Authority 3) Battle Losses And Protection Resource Expenditures 4) Self Defense System Status 5) Residual Threats</p> <p># Requirement Description</p> <p>F31-1 Command And Control The Defense</p> <p>F31-2 Conduct Surveillance And Discrimination</p> <p>F31-3 Monitor And Assess The Situation</p> <p>F31-4 Select The Defensive Response</p> <p>F31-5 Execute The Defensive Response</p> <p>F31-6 Maintain System Capability</p>	

INPUT	OUTPUT
F311 - COMMAND AND CONTROL THE DEFENSE	Description: This function includes the activities required for command and control of the SDS deployment protection which are principally those activities of guidance and direction which require centralized and positive control, or those activities which must interface with applicable external functions. This function does not include those activities required for battle management, detailed tasking, and fire control which have been delegated to other F31 functions. Initially some efforts required for this function may be delegated to the space defense operations center (SPADOC) until sufficient SDS assets are deployed to perform this function within the SDS.
1) Mission Requirements From The JCS And Real-Time Direction From Higher Authority (NCA) 2) Approved OPlans And Procedures 3) Situation Data Including The Defense Suppression Threat 4) C2 Resources; Including Defense Commander, Command Center Personnel & Facilities, And C2 Planning Personnel And Facilities 5) Declaration Of MS III 6) Strategy Selection 7) SDS Deployment Schedules & Revisions	<ol style="list-style-type: none"> 1) Recommendations To HA <ul style="list-style-type: none"> - NCA (Eg. Real-Time Chosen Battle Option) - CINC (Eg. Non-Real-Time Changes To OPPlans And ROEs) 2) Defense Command & management Guidance <ul style="list-style-type: none"> - S&D Criteria - Decision Aids & Procedures - ROEs & Defense Preferences - Strategy Selection Overrides - System Mode Selection - System Management Guidance <p># Requirement Description</p> <p>F311-1 Exercise Command (I.E. Exercise Executive Command Over The Other C2 Functions; Eg Establish C2 Procedures And Choose Battle Operation)</p> <p>F311-2 Preplan And Test Command And Control</p> <p>F311-3 Provide Positive Control (I.E. Activities Of Defense Command Center Personnel; Eg To Assess Situation And Develop Alternatives)</p> <p>F311-4 Provide Management Control (eg Generate Weapons Release, Surveillance Criteria, Develop Integrated Battle Timeline, And Delegate Defensive Response Authority To Other F31x Functions)</p>

INPUT	F312 - CONDUCT SURVEILLANCE AND DISCRIMINATION (S&D)	OUTPUT								
<p>1) Situation Data</p> <ul style="list-style-type: none"> - Information From External Contributing Surveillance Assets (SPACETRACK, ITW & KA System, INTEL) - Information From External Contributing Object/Event Identification And Classification Assets (SPADPC And INTEL) <p>2) Environment Background</p> <p>3) Surveillance And Discrimination (S&D) Criteria</p> <p>4) Object/Event Observables</p> <p>5) Surveillance And Discrimination Resources (SDS Sensors, Personnel And Facilities As They Are Deployed)</p>	<p>Description: This function includes those activities required to manage S&D asset tasking, collect and process surveillance and discrimination data, initiate and maintain potential defense suppression threat data files, and classify and identify objects and events. Initially some efforts required for this function may be delegated to the space-track system (for cold body surveillance), the integrated tactical warning and attack assessment (ITW&AA) system (for space launch detection) and the space defense operations center (SPADOC) (for object and event identification and classification).</p>	<p>1) Object And Event Data To Target Track Files 2) Surveillance And Discrimination (S&D) Activities To Include S&D Expenditures</p> <p># Requirement Description</p> <table border="0"> <tr> <td>F312-1</td> <td>Manage Surveillance And Discrimination Asset Tasking</td> </tr> <tr> <td>F312-2</td> <td>Collect And Process Surveillance And Discrimination Data</td> </tr> <tr> <td>F312-3</td> <td>Initiate And Maintain Potential Defense Suppression Threat Data Files</td> </tr> <tr> <td>F312-4</td> <td>Classify And Identify Objects And Events</td> </tr> </table>	F312-1	Manage Surveillance And Discrimination Asset Tasking	F312-2	Collect And Process Surveillance And Discrimination Data	F312-3	Initiate And Maintain Potential Defense Suppression Threat Data Files	F312-4	Classify And Identify Objects And Events
F312-1	Manage Surveillance And Discrimination Asset Tasking									
F312-2	Collect And Process Surveillance And Discrimination Data									
F312-3	Initiate And Maintain Potential Defense Suppression Threat Data Files									
F312-4	Classify And Identify Objects And Events									

INPUT	F313 - MONITOR AND ASSESS SITUATION	OUTPUT
<p>1) External Intelligence Reports</p> <ul style="list-style-type: none"> - Information From Cooperating External Monitor And Assessment Assets (SPADOC) - Monitor And Assessment Resources (Personnel And Facilities) <p>2) Decision Aids & Procedures</p> <p>3) Battle Data</p> <ul style="list-style-type: none"> - S&D Activities - Defense Activities - OPlans <p>4) Environmental Reports</p> <p>5) Object/Event Data</p> <p>6) Assessment Resources</p>	<p>Description: This function includes those activities required to assess the defense suppression threat force status, determine attack initiation, determine the SDS assets at risk, evaluate the battle situation, and determine the defended SDS assets status. Initially, some efforts required for this function may be delegated to SPADOC (for attacks against SDS space assets) until sufficient SDS assets are deployed to perform this function within the SDS. Some other efforts required for this function may be delegated to external security assets responsible for the security maintenance for the ground locations where SDS assets are deployed.</p>	<p>1) Battle Situation Assessment Data</p> <ul style="list-style-type: none"> - Situation Data - Warning & Assessment Report <p>1) Battle Situation Assessment Data</p> <ul style="list-style-type: none"> - Situation Data - Warning & Assessment Report

INPUT	F314 - SELECT DEFENSIVE RESPONSE	<p>OUTPUT</p> <p>1) Roe's & Defense Preferences; Strategy Selection Override (And Battle Option Selection In Some Circumstances)</p> <p>2) Situation Data</p> <p>3) Target Track File Data</p> <p>4) Response Selection Resources (Personnel And Facilities)</p>								
		<p>Description: This function includes the activities required to identify roe imposed constraints, selected the defensive tactics and countermeasures, and specify response parameters. Initially, some efforts required for this function may be delegated to SPADOC (for attacks against SDS space assets until sufficient sds assets are deployed to perform this function within the SDS.</p> <table border="0"> <thead> <tr> <th style="text-align: center;">#</th> <th style="text-align: center;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F314-1</td> <td>Identify ROE Imposed Constraints</td> </tr> <tr> <td style="text-align: center;">F314-2</td> <td>Select Defensive Tactics And Countermeasures</td> </tr> <tr> <td style="text-align: center;">F314-3</td> <td>Specify Response Parameters</td> </tr> </tbody> </table> <p>1) Strategy & Tactics Selection <ul style="list-style-type: none"> - Response Parameters To Function F315 - Strategy Selection </p> <p>2) Response Parameters</p>	#	Requirement Description	F314-1	Identify ROE Imposed Constraints	F314-2	Select Defensive Tactics And Countermeasures	F314-3	Specify Response Parameters
#	Requirement Description									
F314-1	Identify ROE Imposed Constraints									
F314-2	Select Defensive Tactics And Countermeasures									
F314-3	Specify Response Parameters									

INPUT	OUTPUT												
Description: This function includes the activities required to assign threat target values and allocate threat targets for engagement (for large attacks), assign assets for engagement against the threat targets, engage the threats, and employ defensive countermeasures. Initially, some of these activities may be delegated to external cooperating assets until sufficient SDS assets are deployed to perform this function within the SDS.													
1) Response Parameters 2) Situation Data 3) Track File 4) Threat Object/Event Data 5) Defense Resources (Personnel And Facilities) 6) System Mode Selection	<ul style="list-style-type: none"> 1) Defense Activities <ul style="list-style-type: none"> - Losses & Expenditures 2) Residual Threat - Hostile Threats <table border="0" data-bbox="509 910 802 1389"> <thead> <tr> <th data-bbox="509 1058 535 1389">#</th><th data-bbox="509 1009 567 1389">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="574 1248 600 1389">F315-1</td><td data-bbox="574 1009 600 1389">Assign Threat Target Values</td></tr> <tr> <td data-bbox="607 1248 633 1389">F315-2</td><td data-bbox="607 882 633 1389">Allocate Threat Targets For Engagement</td></tr> <tr> <td data-bbox="639 1248 665 1389">F315-3</td><td data-bbox="639 967 665 1389">Assign Assets For Engagement</td></tr> <tr> <td data-bbox="672 1248 698 1389">F315-4</td><td data-bbox="672 1121 698 1389">Engage Threats</td></tr> <tr> <td data-bbox="705 1248 731 1389">F315-5</td><td data-bbox="705 910 731 1389">Employ Defensive Countermeasures</td></tr> </tbody> </table>	#	Requirement Description	F315-1	Assign Threat Target Values	F315-2	Allocate Threat Targets For Engagement	F315-3	Assign Assets For Engagement	F315-4	Engage Threats	F315-5	Employ Defensive Countermeasures
#	Requirement Description												
F315-1	Assign Threat Target Values												
F315-2	Allocate Threat Targets For Engagement												
F315-3	Assign Assets For Engagement												
F315-4	Engage Threats												
F315-5	Employ Defensive Countermeasures												

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INPUT

F32 - REVISE & MAINTAIN PROGRAM MASTER PLAN

- 1) Original Plans & Schedules
- 2) Element/Asset Status
- 3) Integrated Test Status
- 4) HA Policy & Guidance
- Deficiency Reports
- Incident Reports
- Program Management Directive
- Advance Study Notice
- Operations Planning Guidance
- Change Status
- Higher Authority Feedback/Approval
- Mission Requirements
- 5) Declaration Of MS III
- 6) I & D Report

Description: This function encompasses those activities to maintain and revise the Program Master Plan and supporting plan that guide deployment activities. These activities include the identification and assessment of changes, development and evaluation of options, review and approval of changes, and direction and implementation of approved changes.

- 1) Option Revisions
- 2) PMP TEMP & Changes
- 3) Recommended Changes & Reports
- 4) Impact Assessment
- 5) Schedules & Revisions

OUTPUT

OUTPUT

#	Requirement Description
F32-1	Management Information System
F32-2	SDS Operations Planning Support System
F32-3	Analytical Tools
F32-4	National Test Bed

F321 - IDENTIFY CHANGES	INPUT	OUTPUT				
<p>1) Change Resources 2) Original OPlans & Schedules - PMP TEMP & Changes - Transition/Turnover Plan (T/TI) - Program Management Directive - Program Status Reports - Integrated Logistics Support Plan - Advance Study Notice - Draft Operations Plans - Operations Planning Guidance - Operations Planning Guidance</p> <p>3) Plan Change Status 4) I & D Reports 5) HA Policy & Guidance 6) Changes To OPlans & Procedures 7) Element/Asset Status 8) Integrated Test Status 9) Milestone III</p> <p>Description: This Function Encompasses Activities To Identify Changes To The Program Master Plan And Supporting Plans. These Activities Include Monitoring Status, Program Decision Memoranda And Program Change Directives To Detect Items That May Conflict With Current Plan.</p>	<table border="1"> <thead> <tr> <th data-bbox="437 1142 458 1463">#</th> <th data-bbox="437 1121 458 1353">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="479 1431 501 1501">F321-1</td> <td data-bbox="479 1009 610 1353"> Management Information System -Word Processing/Report Generation -Scheduling -Budgeting -Configuration Management -Requirements Traceability </td> </tr> </tbody> </table>	#	Requirement Description	F321-1	Management Information System -Word Processing/Report Generation -Scheduling -Budgeting -Configuration Management -Requirements Traceability	<p>1) Conflict Reports 2) PMP TEMP & Changes</p>
#	Requirement Description					
F321-1	Management Information System -Word Processing/Report Generation -Scheduling -Budgeting -Configuration Management -Requirements Traceability					

INPUT

- 1) Conflict Reports
- 2) Feasible Objective Options
- 3) Impact Resources

F322 - EVALUATE/ASSESS IMPACT

Description: This function encompasses those activities to determine the import of any detected deviations from the approved plans. These activities include determining the impact and extent upon schedules, budgets, responsibilities, requirements.

OUTPUT

- 1) Impact Assessments
- 2) Impacts

#	Requirement Description
F322-1	M/S
F332-2	SDS Operations Planning Support System
F332-3	Analytical Tools <ul style="list-style-type: none">-Modeling-Simulation-War Gaming
F3422-4	National Test Bed

INPUT	F323 - SELECT OPTIONS <p>1) Impact Assessment 2) Mission Requirements 3) PMP TEMP & Changes 4) Eval/Sel Options Resources</p>	Description: This function encompasses those activities involved in developing and evaluating options and selecting a preferred option for implementing an identified change. These activities include identifying, defining, evaluating, ranking and recommending alternatives.										
OUTPUT		<p>1) Recommended Option 2) Feasible Objective Options</p> <table border="1"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F323-1</td> <td>M/S</td> </tr> <tr> <td>F323-2</td> <td>SDS Operational Planning Support System</td> </tr> <tr> <td>F323-3</td> <td>Analytical Tools</td> </tr> <tr> <td>F323-4</td> <td>National Test Bed</td> </tr> </tbody> </table>	#	Requirement Description	F323-1	M/S	F323-2	SDS Operational Planning Support System	F323-3	Analytical Tools	F323-4	National Test Bed
#	Requirement Description											
F323-1	M/S											
F323-2	SDS Operational Planning Support System											
F323-3	Analytical Tools											
F323-4	National Test Bed											

INPUT	<p>F324 - GAIN APPROVAL</p> <p>Description: This function encompasses those activities involved in obtaining approval required for implementation of a change. These activities include the distribution, coordination and approval of change documentation.</p> <table border="1"> <thead> <tr> <th data-bbox="416 939 448 1277">#</th><th data-bbox="448 939 497 1277">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="448 1214 481 1277">F324-1</td><td data-bbox="481 1214 497 1277">None</td></tr> </tbody> </table>	#	Requirement Description	F324-1	None	OUTPUT	<p>F324 - GAIN APPROVAL</p> <p>Description: This function encompasses those activities involved in obtaining approval required for implementation of a change. These activities include the distribution, coordination and approval of change documentation.</p> <table border="1"> <thead> <tr> <th data-bbox="873 939 905 1277">#</th><th data-bbox="905 939 954 1277">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="905 1214 938 1277">F324-1</td><td data-bbox="938 1214 954 1277">None</td></tr> </tbody> </table>	#	Requirement Description	F324-1	None
#	Requirement Description										
F324-1	None										
#	Requirement Description										
F324-1	None										

INPUT	<p>F325 - IMPLEMENT CHANGE</p> <p>Description: This function encompasses those activities involved in implementation of approved changes to the Program Master Plan. Activities in this function involve the preparation and distribution of approved program change directives and their incorporation in the PMP and ancillary/subordinate plans.</p>
<p>OUTPUT</p> <p>1) Program Change Directive 2) Change Resources</p> <p>1) Option Revision 2) Plan Change Status 3) PMP TEMP & Changes 4) Schedules & Revisions</p>	

INPUT

- 1) PMP TEMP & Changes
- 2) Facilities Design Technical Data
- 3) Asset Technical Data
- 4) Delivery System Technical Data
- 5) Schedules
- 6) Deployment Assets

F33 - DEPLOY ASSETS

Description: This function encompasses those activities involved in the delivery of assets to their operational location. These activities include preparation of launch and/or assembly and checkout of SDS assets, delivery to the operational location (i.e. orbit or ground site), and performing asset acceptance tests.

#	Requirement Description
F33-1	M/S
F33-2	A & E Plans & Specs
F33-3	Real Estate & Facilities
F33-4	Environmental Impact Statement Approval
F33-5	Construction Resources
F33-6	Facility Activation Plan
F33-7	Facility Activation Task Force
F33-8	Facility Acceptance Criteria
F33-9	Quality Assurance Program
F33-10	Special Tools & Test Equipment
F33-11	Trained Personnel
F33-12	Training Program & Equipment
F33-13	Assembly Procedures & Acceptance Criteria
F33-14	Safety Program
F33-15	Inventory Management System
F33-16	Delivery Systems (Surface, Air, Space)
F33-17	Materials Handling Equipment
F33-18	Delivery Procedures (Pack, Ship, Etc)
F33-19	Prepared Operating Locations
F33-20	Transportation Complexes
F33-21	Asset Acceptance Criteria
F33-22	Satellite Control Facilities

OUTPUT

- 1) Acceptance Status & Data
- 2) Asset Status
- 3) I & D Reports

INPUT

- 1) Schedules
- 2) Facilities Design Technical Data
- 3) Facilities & Resources

F331 - PREPARE FACILITIES

Description: This function encompasses those activities to prepare and deliver facilities to be used to assemble, checkout and deliver SDS element assets to their operational locations. These activities include the construction, activation, checkout and acceptance of the facilities.

#	Requirement Description
F331-1	M/S
F331-2	A&E Plans & Specifications
F331-3	Real Estate & Facilities
F331-4	Environmental Impact Statement Approval
F331-5	Construction Resources
F331-6	Facility Activation Plan
F331-7	Facility Activation Task Force
F331-8	Facility Acceptance Criteria

OUTPUT

- 1) Facility Status
- 2) Facility As-Built Technical Data

INPUT

- 1) Facility Status
- 2) Facility As-Built Technical Data
- 3) PMP TEMP & Changes
- 4) Asset Technical Data
- 5) Assets & Checkout Resources

F332 - ASSEMBLE & CHECKOUT ASSETS

Description: This function encompasses those activities to assemble checkout and prepare SDS element assets for delivery to their operational locations. These activities include the receipt and inventory management of all necessary subsystems and piece parts, receipt and maintenance of engineering data and records, scheduling, assembly, inspection test and verification and status reporting of completed configuration items.

- 1) Assembly Status
- 2) Assembly Assets Status

OUTPUT

#	Requirement Description
F332-1	Quality & Assurance Program
F332-2	Special Tools & Test Equipment
F332-3	Facilities
F332-4	Trained Personnel
F332-5	Training Program & Equipment
F332-6	Assembly Procedures
F332-7	Acceptance Criteria
F332-8	Safety Program
F332-9	M/S
F332-10	Inventory Management System

INPUT	F333 - PROVIDE DELIVERY SYSTEMS	Description: This function encompasses those activities that provide the systems to be used to deliver SDS element assets to their operational locations. These activities include scheduling, positioning, preparation of the delivery system prior to loading of the deliverable asset.	OUTPUT																					
		1) PMP TEMP & Changes 2) Delivery System Technical Data 3) Delivery Assets	1) Deliverly System Status 2) Deliverly System as-Built Technical Data																					
			<table border="1"> <thead> <tr> <th data-bbox="479 1056 512 1389">#</th><th data-bbox="512 1056 577 1389">Requirement Description</th><th data-bbox="577 1056 806 1389"></th></tr> </thead> <tbody> <tr> <td data-bbox="479 1267 512 1389">F333-1</td><td data-bbox="512 1267 577 1389">M/S</td><td data-bbox="577 1267 806 1389"></td></tr> <tr> <td data-bbox="577 1267 610 1389">F333-2</td><td data-bbox="610 1267 675 1389">Quality Assurance Program</td><td data-bbox="675 1267 806 1389"></td></tr> <tr> <td data-bbox="675 1267 708 1389">F333-3</td><td data-bbox="708 1267 773 1389">Acceptance Criteria</td><td data-bbox="773 1267 806 1389"></td></tr> <tr> <td data-bbox="773 1267 806 1389">F333-4</td><td data-bbox="806 1267 806 1389">Surface Delivery Systems</td><td data-bbox="806 1267 806 1389"></td></tr> <tr> <td data-bbox="806 1267 838 1389">F333-5</td><td data-bbox="838 1267 904 1389">Airborne Delivery Systems</td><td data-bbox="904 1267 806 1389"></td></tr> <tr> <td data-bbox="904 1267 936 1389">F333-6</td><td data-bbox="936 1267 1002 1389">Space Delivery Systems</td><td data-bbox="1002 1267 806 1389"></td></tr> </tbody> </table>	#	Requirement Description		F333-1	M/S		F333-2	Quality Assurance Program		F333-3	Acceptance Criteria		F333-4	Surface Delivery Systems		F333-5	Airborne Delivery Systems		F333-6	Space Delivery Systems	
#	Requirement Description																							
F333-1	M/S																							
F333-2	Quality Assurance Program																							
F333-3	Acceptance Criteria																							
F333-4	Surface Delivery Systems																							
F333-5	Airborne Delivery Systems																							
F333-6	Space Delivery Systems																							

INPUT	OUTPUT															
<p>F334 - DELIVER ASSETS</p> <p>INPUT</p> <ul style="list-style-type: none"> 1) Assembly Status 2) Delivery System Status 3) Facility Status 4) Delivery System As-Built Technical Data To include Configuration Records 5) PMP TEMP & Changes 6) Delivery Resources <p>OUTPUT</p> <ul style="list-style-type: none"> 1) Delivery System Status <ul style="list-style-type: none"> 1) Assets & Resources 2) Assets & Resources <p>Description: This function encompasses those activities involved in the transportation of SDS element assets to their operational location. These activities include the packing, loading, moving, unloading and unpacking of the asset. Also included are activities of scheduling, quality assurance and status reporting.</p> <table border="1"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F334-1</td> <td>M/S</td> </tr> <tr> <td>F334-2</td> <td>Materials Handling Equipment</td> </tr> <tr> <td>F334-3</td> <td>Packing/Shipping Procedures & Standards</td> </tr> <tr> <td>F334-4</td> <td>Quality Assurance Program</td> </tr> <tr> <td>F334-5</td> <td>Prepared Operating Location</td> </tr> <tr> <td>F334-6</td> <td>Transportation Complex <ul style="list-style-type: none"> -Surface -Space -Air </td> </tr> <tr> <td>F334-7</td> <td>Trained Transportation Personnel</td> </tr> </tbody> </table>	#	Requirement Description	F334-1	M/S	F334-2	Materials Handling Equipment	F334-3	Packing/Shipping Procedures & Standards	F334-4	Quality Assurance Program	F334-5	Prepared Operating Location	F334-6	Transportation Complex <ul style="list-style-type: none"> -Surface -Space -Air 	F334-7	Trained Transportation Personnel
#	Requirement Description															
F334-1	M/S															
F334-2	Materials Handling Equipment															
F334-3	Packing/Shipping Procedures & Standards															
F334-4	Quality Assurance Program															
F334-5	Prepared Operating Location															
F334-6	Transportation Complex <ul style="list-style-type: none"> -Surface -Space -Air 															
F334-7	Trained Transportation Personnel															

INPUT	F335 - PERFORM ASSET ACCEPTANCE TEST	OUTPUT																					
<ul style="list-style-type: none"> 1) Delivery System Status And Configuration Records 2) PMP TEMP & Changes 3) Assets and Resources 4) Performance Assets 	<p>Description: This function encompasses those activities to conduct tests to determine acceptability of delivered SDS element assets. These activities include maintenance of test procedures, performing tests, collection and evaluation of acceptance data, and reporting of test results and status.</p> <table border="0" data-bbox="486 952 816 1347"> <thead> <tr> <th data-bbox="486 1142 507 1320">#</th><th data-bbox="486 994 507 1248">Required Description</th><th data-bbox="507 1142 528 1320"></th></tr> </thead> <tbody> <tr> <td data-bbox="528 1142 549 1320">F335-1</td><td data-bbox="528 1015 549 1290">Acceptance Criteria</td><td data-bbox="549 1142 571 1320"></td></tr> <tr> <td data-bbox="571 1142 592 1320">F335-2</td><td data-bbox="571 952 592 1290">Test Procedures Equipment</td><td data-bbox="592 1142 613 1320"></td></tr> <tr> <td data-bbox="613 1142 634 1320">F335-3</td><td data-bbox="613 1184 634 1290">M/S</td><td data-bbox="634 1142 656 1320"></td></tr> <tr> <td data-bbox="656 1142 677 1320">F335-4</td><td data-bbox="656 1079 677 1290">Element Control</td><td data-bbox="677 1142 698 1320"></td></tr> <tr> <td data-bbox="698 1142 719 1320">F335-5</td><td data-bbox="698 1079 719 1290">Test Personnel</td><td data-bbox="719 1142 740 1320"></td></tr> <tr> <td data-bbox="740 1142 762 1320">F335-6</td><td data-bbox="740 1079 762 1290">Quality Assurance</td><td data-bbox="762 1142 783 1320"></td></tr> </tbody> </table>	#	Required Description		F335-1	Acceptance Criteria		F335-2	Test Procedures Equipment		F335-3	M/S		F335-4	Element Control		F335-5	Test Personnel		F335-6	Quality Assurance		<ul style="list-style-type: none"> 1) Acceptance Status And Data 2) I & D Reports
#	Required Description																						
F335-1	Acceptance Criteria																						
F335-2	Test Procedures Equipment																						
F335-3	M/S																						
F335-4	Element Control																						
F335-5	Test Personnel																						
F335-6	Quality Assurance																						

INPUT

- 1) PMP TEMP & Changes
- 2) Acceptance Data & Status
- 3) Asset Data
- 4) Connection Resources
- 5) Schedules

F34 - CONNECT SDS ELEMENT ASSETS

Description: This function encompasses those activities to incrementally integrate new assets into accepted SDS element configurations (e.g. constellations). These activities include the planning, coordination and reconfiguration of the element baseline, interconnecting the assets, and verifying element functional capability subsequent to insertion of the new asset.

OUTPUT

- 1) Element Status & Data
- 2) Element Test Results & Configuration
- 3) I & D Reports

#	Requirement Description
F34-1	Management Information System
F34-2	Deployment Planning
F34-3	Procedures & Test Equipment
F34-4	Quality Assurance Program
F34-5	Trained Personnel
F34-6	Element Control Facilities
F34-7	Interface Simulators
F34-8	Analytical Tools
F34-9	Comm Tech Control Facilities
F34-10	Acceptance Criteria

INPUT**F341 - COORDINATE ELEMENT
CONFIGURATION CHANGE**

- 1) PMP TEMP & Changes
- 2) Acceptance Data & Status
- 3) Schedules
- 4) Configuration Change Resources

Description: This function encompasses those activities to coordinate a change in an SDS element configuration covered by the introduction of an additional operating asset into the configuration. These activities include scheduling, configuration management and tasking of affected system and agencies

OUTPUT

- 1) Reconfiguration Timeline
- 2) Element Re-Configuration Plan

#	Requirement Description
F341-1	M/S
F341-2	Deployment Plan

	<p>INPUT</p> <ul style="list-style-type: none"> 1) Reconfiguration Timeline 2) Reconfiguration Plan 3) Element Test Results & Configuration 4) Reconfigure Resources 	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) Reconfiguration Status 2) Configuration Data 														
	<p>Description: This function encompasses those activities to modify the configuration of a baseline SDS element to incorporate additional assets. These activities may include: velocities of already deployed assets, configuration of proper function and location, subsequent to relocation & retask in conjunction with relocation.</p>	<table border="0"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F342-1</td> <td>Procedures & Test Equipment</td> </tr> <tr> <td>F342-2</td> <td>Element Control Facilities</td> </tr> <tr> <td>F342-3</td> <td>Trained Personnel</td> </tr> <tr> <td>F342-4</td> <td>M/S</td> </tr> <tr> <td>F342-5</td> <td>Quality Assurance</td> </tr> <tr> <td>F342-6</td> <td>Comm Tech Control Facility</td> </tr> </tbody> </table>	#	Requirement Description	F342-1	Procedures & Test Equipment	F342-2	Element Control Facilities	F342-3	Trained Personnel	F342-4	M/S	F342-5	Quality Assurance	F342-6	Comm Tech Control Facility
#	Requirement Description															
F342-1	Procedures & Test Equipment															
F342-2	Element Control Facilities															
F342-3	Trained Personnel															
F342-4	M/S															
F342-5	Quality Assurance															
F342-6	Comm Tech Control Facility															

INPUT

- 1) Reconfiguration Status
- 2) Configuration Data
- 3) Asset Data
- 4) Acceptance Data/Status
- 5) Interconnect Asset Resources

F343 - INTERCONNECT ASSETS

Description: This function encompasses those activities to establish and verify connectivity among SDS element assets coincident with insertion of new assets into the baseline. The activities involve establishing communications links, verifying link function, tasking new asset and transferring operational control.

OUTPUT

- 1) Interconnect Status
- 2) Connection Data

#	Requirement Description
F343-1	Element Control Facilities
F343-2	Procedures & Test Equipment
F343-3	Quality Assurance
F343-4	Comm Tech Control Facilities
F343-5	Trained Personnel (Element Level)

INPUT

- 1) PMP TEMP & Changes
- 2) Interconnect Status
- 3) Connection Data
- 4) Configuration Data
- 5) Acceptance Data & Status
- 6) Verification Resources

F344 - VERIFY ELEMENT FUNCTIONAL CAPABILITY

Description: This function encompasses those activities to verify the integral functional capability of the SDS element. These activities involve maintenance of procedures, performance of functional verification tests, collection and verification of data and report of test results and status.

OUTPUT

- 1) Element Status & Data
- 2) Element Test Results & Configuration
- 3) I & D Reports

#	Requirement Description
F344-1	Procedures & Test Equipment
F344-2	Quality Assurance
F344-3	MIS
F344-4	Acceptance Criteria
F344-5	Travel Personnel (Element Level)
F344-6	Element Control Facilities
F344-7	Interface Simulators
F344-8	Analytical Tools (Element Level) <ul style="list-style-type: none">- Model- Simulators

INPUT	F35 - CONDUCT SYSTEM TEST AND EVALUATION	OUTPUT																				
<p>1) Element Status & Data 2) Element Test Results & Configuration 3) PNP TEMP & Changes 4) Schedules 5) Test & Evaluation Resources</p> <p>Description: This function encompasses those activities to eventually integrate new elements into the accepted SDS system configuration. These activities include the planning, coordination and reconfiguration of the system baseline, interconnecting the elements, and verifying system functional capability subsequent to integration of the new element.</p>		<p>1) System Test Results & Configuration 2) Integration Test Status & Results 3) I & D Reports 4) Validated Planning Factors</p> <table border="1"> <thead> <tr> <th data-bbox="486 1009 507 1347">#</th><th data-bbox="486 1009 507 1347">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="535 1009 556 1347">F35-1</td><td data-bbox="535 1009 556 1347">Management Information System</td></tr> <tr> <td data-bbox="584 1009 605 1347">F35-2</td><td data-bbox="584 1009 605 1347">Integration Plans & Procedures</td></tr> <tr> <td data-bbox="633 1009 654 1347">F35-3</td><td data-bbox="633 1009 654 1347">Element Control Facilities</td></tr> <tr> <td data-bbox="682 1009 703 1347">F35-4</td><td data-bbox="682 1009 703 1347">Trained Personnel</td></tr> <tr> <td data-bbox="731 1009 752 1347">F35-5</td><td data-bbox="731 1009 752 1347">Quality Assurance Program</td></tr> <tr> <td data-bbox="780 1009 801 1347">F35-6</td><td data-bbox="780 1009 801 1347">System Control Facilities</td></tr> <tr> <td data-bbox="829 1009 850 1347">F35-7</td><td data-bbox="829 1009 850 1347">Analytical Tools</td></tr> <tr> <td data-bbox="878 1009 899 1347">F35-8</td><td data-bbox="878 1009 899 1347">Procedures & Test Equipment</td></tr> <tr> <td data-bbox="926 1009 948 1347">F35-9</td><td data-bbox="926 1009 948 1347">Acceptance Criteria</td></tr> </tbody> </table>	#	Requirement Description	F35-1	Management Information System	F35-2	Integration Plans & Procedures	F35-3	Element Control Facilities	F35-4	Trained Personnel	F35-5	Quality Assurance Program	F35-6	System Control Facilities	F35-7	Analytical Tools	F35-8	Procedures & Test Equipment	F35-9	Acceptance Criteria
#	Requirement Description																					
F35-1	Management Information System																					
F35-2	Integration Plans & Procedures																					
F35-3	Element Control Facilities																					
F35-4	Trained Personnel																					
F35-5	Quality Assurance Program																					
F35-6	System Control Facilities																					
F35-7	Analytical Tools																					
F35-8	Procedures & Test Equipment																					
F35-9	Acceptance Criteria																					

INPUT	OUTPUT						
F351 - COORDINATE SYSTEM CONFIGURATION	1) System Reconfiguration Timeline 2) System Configuration Plan						
<p>Description: This function encompasses those activities to coordinate a change on the SDS system configuration caused by the introduction of an additional element into the baseline configuration. These activities include scheduling, configuration management and tasking of affected systems/agencies.</p> <p>INPUT</p> <ul style="list-style-type: none"> 1) Element Test Results & Configuration 2) Element Status & Data 3) PMP TEMP & Changes 4) Schedules 5) Coordination Resources 	<p>Requirement Description</p> <table> <tr> <td>#.</td> <td>F351-1</td> <td>M/S</td> </tr> <tr> <td></td> <td>F351-2</td> <td>Coordinate System Configuration</td> </tr> </table>	#.	F351-1	M/S		F351-2	Coordinate System Configuration
#.	F351-1	M/S					
	F351-2	Coordinate System Configuration					

INPUT

- 1) System Reconfiguration Timeline
- 2) System Configuration Plan
- 3) System Test Results & Configuration
- 4) Reconfigure Resources

F352 - RECONFIGURE SYSTEM BASELINE

Description: This function encompasses those activities to modify the configuration of the baseline SDS system to incorporate additional elements. These activities may involve: Installation and checkout of software releases, removal of test drivers/interface simulators, update of databases.

OUTPUT

- 1) Reconfiguration Status
- 2) Configuration Data

#	Requirement Description
F352-1	Procedures
F352-2	Element Control Facilities
F352-3	Trained Personnel
F352-4	M/S
F352-5	Quality Assurance
F352-6	Comm Network Control Facilities

<p>INPUT</p> <ul style="list-style-type: none"> 1) Reconfiguration Status 2) Configuration Data 3) Element Test Results & Configuration 4) Interconnect Resources 	<p>F353 - INTERCONNECT SYSTEM ELEMENTS</p> <p>Description: This function encompasses those activities to establish and verify connectivity among SDS elements associated with the insertion of a new element into the baseline. The activities involve establishing communications links, verifying link functions, tasking new elements and transferring operational control.</p>	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) Interconnect Status 2) Connection Data
--	---	---

#	Requirement Descriptions
F353-1	Element Control Facilities
F353-2	Procedures & Test Equipment
F353-3	Quality Assurance
F353-4	Comm Network Control Facilities
F353-5	Trained Personnel (System Level)

INPUT

- 1) PMP TEMP & Changes
- 2) Interconnect Status
- 3) Connection Data
- 4) Configuration Data
- 5) Element Test Results & Configuration
- 6) System T & E Resources

F354 - CONDUCT INTEGRATED SYSTEM TEST & EVALUATION

OUTPUT

- 1) Integrated System Test Status
- 2) System Test Results & Configuration
- 3) Validated Planning Factors
- 4) I & D Report

Description: This function encompasses those activities to verify the overall functional and performance capability of the SDS system. These activities involve maintenance of procedures, performance of functional tests, collection and evaluation of test data, and reporting of test results and status. Evaluation of test results may include special analysis and simulation. Also the preceeded are validated planning factors to be used for operational planning.

#	Requirement Description
F354-1	Procedures & Test Equipment
F354-2	Quality Assurance
F354-3	M/S
F354-4	Acceptance Criteria
F354-5	Trained Personnel (System Level)
F354-6	Element Control Facilities
F354-7	Analytical Tools (System Level) - Modeling - Simulation

INPUT

- 1) PMP TEMP & Changes
- 2) HA Approval & Standards
- 3) OPlans & Procedures
- 4) Records
 - Security Records
 - Training Records
 - HRP Records
- 5) Transition Resources
- 6) System Test Results & Configuration
- 7) Schedules

F36 - TRANSITION TO IOC

Description: This function encompasses those activities to formally transfer operational and support responsibility from the developing agency to the using agency. These activities include validating procedures, review and approval of operation plans, certification of operations and maintenance crew personnel, operational readiness demonstration/inspection, and declaration of operational capability.

OUTPUT

- 1) Declaration Of Operational Readiness
- 2) System Handover To SDS

#	Requirement Description
F36-1	Management Information System
F36-2	SDS Operations Planning Support System
F36-3	Analytical Tools
F36-4	National Test Bed
F36-5	Trained & Certified Operations Staff
F36-6	Trained Operations Planning Staff
F36-7	Operations Planning Guidance
F36-8	Transition Criteria
F36-9	Quality Assurance Program
F36-10	Exercise Drivers
F36-11	Trained Inspection Team
F36-12	Test Targets & Training Range

INPUT	F361 - UPDATE/APPROVE OPERATIONS PLANS	OUTPUT
<ul style="list-style-type: none"> 1) OPlans & Procedures 2) PMP TEMP & Changes 3) HA Approval & Standards 4) Schedules 5) Update/Approval Resources 	<p>Description: This function encompasses those activities to review, update and approve operations and supporting plans. These activities include: review and revision of operations and supporting plans based on revisions in planning factors and system capabilities resulting from the evaluation of integrated system operational test results; coordination of plan changes with the JCS*; and services; and forward approval of the plans by the appropriate authority. The review and approval process may include modeling, simulation, war gaming etc.</p>	<ul style="list-style-type: none"> 1) Approved OPlans

#	Requirement Description
F361-1	M/S
F361-2	SDS Operations Planning Support System
F361-3	Analytical Tools (Simulation, War Gaming)
F361-4	MTB
F361-5	Trained Operations Planning Staff
F361-6	Plan Preparation Policy Guidelines

* Other U&S Commands

	F362 - VALIDATE OPERATIONAL PROCEDURES	INPUT	<p>1) Approved OPPlans 2) System Test Results & Configuration 3) Draft Procedures 4) Validation Resources</p> <p>Description: This function involves CINC SDS review and validation of operational procedures (SOPs), task menus, COOPS, etc., developed internally by SDS and SDS components to guide the range of human and automatic procedures and processes to be followed according to prevailing circumstances. The function includes both BMC2 and technical procedures involved in employing sds.</p>	<p>OUTPUT</p> <p>1) Validated Procedures</p> <table border="1"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F362-1</td><td>Validation Criteria</td></tr> <tr> <td>F362-2</td><td>Trained Personnel</td></tr> <tr> <td>F362-3</td><td>Quality Assurance</td></tr> <tr> <td>F362-4</td><td>National Test Bed</td></tr> </tbody> </table>	#	Requirement Description	F362-1	Validation Criteria	F362-2	Trained Personnel	F362-3	Quality Assurance	F362-4	National Test Bed
#	Requirement Description													
F362-1	Validation Criteria													
F362-2	Trained Personnel													
F362-3	Quality Assurance													
F362-4	National Test Bed													

INPUT	<p>F363 - CERTIFY SDS PERSONNEL</p> <p>Description: This function encompasses the formal certification by responsible certification authorities for the qualification of each member of the SDS operational and technical cadre charged with responsibilities critical to the safe and effective maintenance, preparation and operation of the SDS system. The function involves verification of successful completion of formal and out initial training and successful demonstration of in-depth knowledge/understanding of applicable plans, procedures and techniques for employing the SDS in peacetime, crisis and conflict situations.</p>	<p>OUTPUT</p> <p>1) Certification Status 2) Certified Personnel</p>
-------	--	--

- 1) Validated Procedures
- 2) Transition/Turnover Plan (T/TP)
- 3) PMP TEMP & Changes
- 4) HA Approval & Standards
- 5) Security Records
- 6) Training Records
- 7) HRP Records
- 8) Personnel & Resources

#	Requirement Description
F363-1	Qualification Standards
F363-2	Certifiable Personnel
F363-3	Operational Simulators & NTB
F363-4	Procedures
F363-5	M/S
F363-6	Quality Assurance

INPUT

- 1) Validated Procedures
- 2) PMP TEMP & Changes
- 3) Transition/Turnover Plan
- 4) Personnel Certification Status
- 5) Certified Personnel
- 6) SDS Ready Assets & Facilities
- 7) Approved OPlans

F364 - PERFORM OPERATIONAL DEMONSTRATION

Description: This function involves a comprehensive demonstration and evaluation of the capability of all organizational, operational and system elements of the SDS to perform the bdm mission. The demonstration, conducted and evaluated by a competent and objective agency external to the SDS mission performance in a simulated conflict environment.

OUTPUT**1) Demonstration Evaluation Results**

#	Requirement Description
F364-1	Demonstration Plan
F364-2	Exercise Driver/NTB
F364-3	Trained Inspection Team
F364-4	Test Targets & Training Range

<p>F365 - CERTIFY SDS OPERATIONALLY READY</p> <p>INPUT</p> <ul style="list-style-type: none"> 1) Approved Operations Plan 2) Personnel Certification Status 3) Demonstration Evaluation Results 4) Certification Resources <p>Description: Based on an accepted demonstration and evaluation of SDS mission performance capability, competent authority will certify the SDS operationally ready.</p>	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) Declaration Of Operational Readiness 2) System Handover To SDS
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STRATEGIC DEFENSE SYSTEM

**FUNCTIONAL DESCRIPTIONS
REQUIREMENTS AND INPUT/OUTPUT
(EMPLOYMENT)**

INPUT	F4 - EMPLOY SDS	OUTPUT																
<p>1) Declaration Of Initial Operational Capability (IOC)</p> <p>2) Policy, Missions, And Directions From HA</p> <p>3) External C2, Intelligence, And Friendly Force Reports</p> <p>4) Threat Objects And Events</p> <p>5) Environment</p> <p>6) Deployment Handover Data And Information</p>	<p>description: This high level function encompasses all the activities, processes, and means to utilize the deployed SDS to provide defense of the United States and its Allies against strategic ballistic missiles, as well as to provide SDS self defense and to support collateral and external missions, in accordance with national policy, mission requirements, and guidance and direction from Higher Authority (HA). The function involves controlling the SDS, conducting surveillance and discrimination, monitoring and assessing the situation, selecting a defensive response, executing the selected response, and maintaining and supporting the SDS system.</p> <table> <thead> <tr> <th data-bbox="687 1036 719 1429">#</th><th data-bbox="687 1036 719 1429">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="736 1036 768 1429">F41-1</td><td data-bbox="736 1036 768 1429">Command And Control Elements And Resources</td></tr> <tr> <td data-bbox="784 1036 817 1429">F41-2</td><td data-bbox="784 1036 817 1429">Surveillance And Discrimination Elements And Resources</td></tr> <tr> <td data-bbox="833 1036 866 1429">F41-3</td><td data-bbox="833 1036 866 1429">Situation Monitoring And Assessment Resources</td></tr> <tr> <td data-bbox="882 1036 915 1429">F41-4</td><td data-bbox="882 1036 915 1429">Response Selection Resources</td></tr> <tr> <td data-bbox="931 1036 964 1429">F41-5</td><td data-bbox="931 1036 964 1429">Engagement Elements And Resources</td></tr> <tr> <td data-bbox="980 1036 1013 1429">F41-6</td><td data-bbox="980 1036 1013 1429">System Operations And Maintenance Resources</td></tr> <tr> <td data-bbox="1029 1036 1062 1429">F41-7</td><td data-bbox="1029 1036 1062 1429">New And Reconstitution Resources</td></tr> </tbody> </table>	#	Requirement Description	F41-1	Command And Control Elements And Resources	F41-2	Surveillance And Discrimination Elements And Resources	F41-3	Situation Monitoring And Assessment Resources	F41-4	Response Selection Resources	F41-5	Engagement Elements And Resources	F41-6	System Operations And Maintenance Resources	F41-7	New And Reconstitution Resources	<p>1) Coordination With And Recommendations To HA</p> <p>2) Warning And Assessment Reports</p> <p>3) Object And Event Data</p> <p>4) Destroyed And Residual Threats</p> <p>5) System Status Data</p> <p>6) Retired Equipment</p> <p>7) Battle Losses And Expenditures</p>
#	Requirement Description																	
F41-1	Command And Control Elements And Resources																	
F41-2	Surveillance And Discrimination Elements And Resources																	
F41-3	Situation Monitoring And Assessment Resources																	
F41-4	Response Selection Resources																	
F41-5	Engagement Elements And Resources																	
F41-6	System Operations And Maintenance Resources																	
F41-7	New And Reconstitution Resources																	

INPUT	F41 - CONTROL THE SYSTEM	OUTPUT																																				
<ul style="list-style-type: none"> 1) Declaration Of IOC 2) Policy, Mission, And Direction From HA 3) Situation Data 4) Engagement Strategy Nomination 5) External C2 Reports And Plans 	<p>Description: This High Level Function Encompasses The Processes And Means To Provide High Level Human Control Of The SDS And Its Operations In Accordance With National Policy, SDS Mission Objectives, And Guidance And Direction From HA. The Function Includes Issuing Command Policy And Guidance, Preparing And Revising Plans And Procedures, Providing Positive Control Of The SDS, And Providing High Level System Management Control.</p> <table border="0" data-bbox="567 1009 1302 1507"> <thead> <tr> <th data-bbox="567 1431 600 1507">#</th> <th data-bbox="567 1072 600 1381">Requirement Description</th> <th data-bbox="616 1431 1302 1507">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="616 1431 649 1507">F41-1</td> <td data-bbox="616 861 649 1381">SDS Commander, Alternates, And Command Staff</td> <td data-bbox="649 1431 682 1507">Planning Staff</td> </tr> <tr> <td data-bbox="698 1431 731 1507">F41-2</td> <td data-bbox="698 1284 731 1381"></td> <td data-bbox="731 1136 763 1381">Positive Control Teams</td> </tr> <tr> <td data-bbox="780 1431 812 1507">F41-3</td> <td data-bbox="780 1284 812 1381"></td> <td data-bbox="812 988 845 1381">System Management Control Teams</td> </tr> <tr> <td data-bbox="861 1431 894 1507">F41-4</td> <td data-bbox="861 1284 894 1381"></td> <td data-bbox="894 925 926 1381">Primary And Alternate Command Facilities</td> </tr> <tr> <td data-bbox="943 1431 975 1507">F41-5</td> <td data-bbox="943 1284 975 1381"></td> <td data-bbox="975 1009 1008 1381">Planning And Simulation Facilities</td> </tr> <tr> <td data-bbox="1024 1431 1057 1507">F41-6</td> <td data-bbox="1024 1284 1057 1381"></td> <td data-bbox="1057 840 1090 1381">Primary And Alternate Positive Control Cell Facilities</td> </tr> <tr> <td data-bbox="1106 1431 1139 1507">F41-7</td> <td data-bbox="1106 1284 1139 1381"></td> <td data-bbox="1139 840 1171 1381">Primary And Alternate System Management Control Facilities</td> </tr> <tr> <td data-bbox="1188 1431 1220 1507">F41-8</td> <td data-bbox="1188 1284 1220 1381"></td> <td data-bbox="1220 1115 1253 1381">Communications With HA</td> </tr> <tr> <td data-bbox="1269 1431 1302 1507">F41-9</td> <td data-bbox="1269 1284 1302 1381"></td> <td data-bbox="1302 777 1334 1381">Communications And Interfaces With All Other Functions Of The Employ SDS Function</td> </tr> <tr> <td data-bbox="1351 1431 1383 1507">F41-10</td> <td data-bbox="1351 1284 1383 1381"></td> <td data-bbox="1383 1431 1416 1381">Means To Receive External C2 Reports And Plans</td> </tr> <tr> <td data-bbox="1432 1431 1465 1507">F41-11</td> <td data-bbox="1432 1284 1465 1381"></td> <td data-bbox="1465 1431 1498 1381"></td> </tr> </tbody> </table>	#	Requirement Description	Requirement Description	F41-1	SDS Commander, Alternates, And Command Staff	Planning Staff	F41-2		Positive Control Teams	F41-3		System Management Control Teams	F41-4		Primary And Alternate Command Facilities	F41-5		Planning And Simulation Facilities	F41-6		Primary And Alternate Positive Control Cell Facilities	F41-7		Primary And Alternate System Management Control Facilities	F41-8		Communications With HA	F41-9		Communications And Interfaces With All Other Functions Of The Employ SDS Function	F41-10		Means To Receive External C2 Reports And Plans	F41-11			<ul style="list-style-type: none"> 1) Coordination With And Recommendations To HA 2) Validate Operational Concepts 3) Approved Decision Aids And Validated Procedures 4) Current Rules Of Engagement 5) Current Defense Preferences 6) System Mode Selections 7) Engagement Strategy Overrides 8) Surveillance And Discrimination Criteria 9) System Configuration Criteria 10) Recovery And Reconstitution Priorities
#	Requirement Description	Requirement Description																																				
F41-1	SDS Commander, Alternates, And Command Staff	Planning Staff																																				
F41-2		Positive Control Teams																																				
F41-3		System Management Control Teams																																				
F41-4		Primary And Alternate Command Facilities																																				
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F41-9		Communications And Interfaces With All Other Functions Of The Employ SDS Function																																				
F41-10		Means To Receive External C2 Reports And Plans																																				
F41-11																																						

INPUT	F411 - ISSUE COMMAND POLICY AND GUIDANCE	OUTPUT												
<p>1) Declaration of IOC 2) Policy, missions, and direction from HA</p> <p>Description: This function encompasses the high level command responsibilities and activities of interpreting and assessing policy and missions for the SDS, establishing command policy and guidance, delegating decision authority to subordinates, and maintaining continuity of command. The function involves coordination with HA, other Unified and Specified (U&S) Commands, and the Component Commands and Services on matters of policy and mission.</p>	<table border="1"> <thead> <tr> <th data-bbox="545 1381 561 1402">#</th><th data-bbox="545 1001 561 1296">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="610 1381 626 1402">F411-1</td><td data-bbox="610 958 626 1296">SDS Commander And Alternates</td></tr> <tr> <td data-bbox="675 1381 691 1402">F411-2</td><td data-bbox="675 1127 691 1296">Command Staff</td></tr> <tr> <td data-bbox="724 1381 740 1402">F411-3</td><td data-bbox="724 853 740 1296">Primary And Alternate Command Facilities</td></tr> <tr> <td data-bbox="773 1381 789 1402">F411-4</td><td data-bbox="773 1022 789 1296">Communications With HA</td></tr> <tr> <td data-bbox="822 1381 838 1402">F411-5</td><td data-bbox="822 747 838 1296">Communications With U&S Commands, Component Commands, And Services</td></tr> </tbody> </table>	#	Requirement Description	F411-1	SDS Commander And Alternates	F411-2	Command Staff	F411-3	Primary And Alternate Command Facilities	F411-4	Communications With HA	F411-5	Communications With U&S Commands, Component Commands, And Services	<p>1) Coordination with HA 2) Coordination with U&S Commands, Component Commands, and Services 3) Command policy/guidance 4) Delegated authority for planning, positive control, and system management control</p>
#	Requirement Description													
F411-1	SDS Commander And Alternates													
F411-2	Command Staff													
F411-3	Primary And Alternate Command Facilities													
F411-4	Communications With HA													
F411-5	Communications With U&S Commands, Component Commands, And Services													

INPUT	F4111 - INTERPRET/ASSESS POLICY AND MISSIONS	OUTPUT														
<p>1) Declaration Of IOC</p> <p>2) Mission, Policy, And Approvals From HA</p> <p>3) Inputs From Coordination With U&S Commands, Component Commands, And Services</p>	<p>Description: This command function involves interpretation, assessment, and coordination of existing and proposed policy and SDS missions to update and promulgate the command mission description for the SDS. The function involves assessment of the feasibility and impact of proposed policy and mission changes and includes coordination with HA, other U&S Commands, Component Commands, and Services.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4111-1</td><td>SDS Commander</td></tr> <tr> <td>F4111-2</td><td>Command Staff</td></tr> <tr> <td>F4111-3</td><td>Peacetime Command And Staff Facilities</td></tr> <tr> <td>F4111-4</td><td>Communications With HA, U&S Commands, Component Commands, And Services</td></tr> <tr> <td>F4111-5</td><td>Analytical Tools For Feasibility And Impact Assessment</td></tr> <tr> <td>F4111-6</td><td>Document Production Capabilities</td></tr> </tbody> </table>	#	Requirement Description	F4111-1	SDS Commander	F4111-2	Command Staff	F4111-3	Peacetime Command And Staff Facilities	F4111-4	Communications With HA, U&S Commands, Component Commands, And Services	F4111-5	Analytical Tools For Feasibility And Impact Assessment	F4111-6	Document Production Capabilities	<p>1) Coordination With HA</p> <p>2) Outputs Of Coordination With U&S Commands, Component Commands, And Services</p> <p>3) Promulgation Of Revised/Updated Command Mission Description</p>
#	Requirement Description															
F4111-1	SDS Commander															
F4111-2	Command Staff															
F4111-3	Peacetime Command And Staff Facilities															
F4111-4	Communications With HA, U&S Commands, Component Commands, And Services															
F4111-5	Analytical Tools For Feasibility And Impact Assessment															
F4111-6	Document Production Capabilities															

INPUT	<p>F4112 - ESTABLISH COMMAND POLICY/GUIDANCE</p> <p>Description: This command function involves developing and providing the command-level policy and guidance for planning, positive control of the SDS, and system management control of subordinate SDS management functions and activities. Inherent in the policy for these is guidance for delegation of authority and for continuity of command.</p> <table border="0"> <thead> <tr> <th data-bbox="502 1030 530 1431">#</th><th data-bbox="502 1030 530 1326">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="567 1129 595 1431">F4112-1</td><td data-bbox="567 1129 595 1326">SDS Commander</td></tr> <tr> <td data-bbox="623 806 651 1431">F4112-2</td><td data-bbox="623 806 651 1326">Communications Between Commander And Staff</td></tr> </tbody> </table>	#	Requirement Description	F4112-1	SDS Commander	F4112-2	Communications Between Commander And Staff
#	Requirement Description						
F4112-1	SDS Commander						
F4112-2	Communications Between Commander And Staff						
OUTPUT	<p>F4112 - ESTABLISH COMMAND POLICY/GUIDANCE</p> <p>1) Policy/Guidance For Planning 2) Policy/Guidance For Positive Control Of SDS 3) Policy/Guidance For System Management Control 4) Guidance For Delegation Of Authority 5) Guidance For Continuity Of Command</p>						

INPUT	<p>F4113 - DELEGATE DECISION AUTHORITY</p> <p>1) Command Policy And Guidance For Delegation Of Authority</p>	<p>OUTPUT</p> <p>1) Authority For Planning</p> <p>2) Authority For Positive Control</p> <p>3) Authority For System Management Control</p> <p>4) Authority For Acting Commanders And Successors To The SDS Commander</p> <p>Description: This command function involves the formalized delegation of decision authority to subordinates in accordance with command policy and guidance. The function provides for delegation of decision authority for planning, positive control, and system management control. It also provides authority for acting commanders and successors to the SDS Commander.</p> <table border="1"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4113-1</td><td>SDS Commander</td></tr> <tr> <td>F4113-2</td><td>Communications Between Commander And Subordinates</td></tr> </tbody> </table>	#	Requirement Description	F4113-1	SDS Commander	F4113-2	Communications Between Commander And Subordinates
#	Requirement Description							
F4113-1	SDS Commander							
F4113-2	Communications Between Commander And Subordinates							

INPUT	F4114 - MAINTAIN CONTINUITY OF COMMAND	OUTPUT
<p>1) Command Mission Description 2) Guidance For Continuity Of Command 3) Authority For Acting Commander And Successors To Commander 4) Evaluation Of Threat</p> <p>Description: This function encompasses all provisions and activities to ensure there is at all times one valid SDS Commander and that he is recognized as such by the structure, including HA, other U&S Commands, and subordinate personnel within the SDS. It includes establishment of a continuity of command plan and implementation of day-to-day continuity of command, change of location of command, and devolution of command.</p>	<p>1) One Valid And Recognized SDS Commander At All Times</p>	

#	Requirement Description
F4114-1	SDS Commander And Alternates
F4114-2	Continuity Of Command Planning Staff
F4114-3	Primary And Alternate Command Facilities (Including Personnel Transportation)
F4114-4	Communications Between Commander And Staff
F4114-5	Communications Among Primary And Alternate Facilities
F4114-6	Communications With HA, U&S Commands, And Subordinate Commands

INPUT	F412 - PREPARE/REVISE PLANS AND PROCEDURES	OUTPUT												
1) Approvals From HA 2) Command Policy/Guidance For Planning 3) Authority For Planning 4) Threat Evaluation 5) External C2 Plans	<p>Description: This function encompasses deliberate planning and associated activities to define system and force requirements, formulate operational concepts and plans, develop baseline rules of engagement, refine decision aids and procedures, and conduct operational exercises. The function involves coordination with HA, other U&S Commands, Component Commands, and Services.</p> <table border="1" data-bbox="551 1036 866 1478"> <thead> <tr> <th data-bbox="551 1036 584 1436">#</th><th data-bbox="551 1036 584 1436">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="600 1036 633 1436">F412-1</td><td data-bbox="600 1036 633 1436">Planning Staff</td></tr> <tr> <td data-bbox="665 1036 698 1436">F412-2</td><td data-bbox="665 1036 698 1436">Planning Facilities</td></tr> <tr> <td data-bbox="731 1036 763 1436">F412-3</td><td data-bbox="731 1036 763 1436">Simulation Capabilities</td></tr> <tr> <td data-bbox="796 1036 829 1436">F412-4</td><td data-bbox="796 1036 829 1436">Facilities For Operational Exercises And Data Collection</td></tr> <tr> <td data-bbox="861 1036 894 1436">F412-5</td><td data-bbox="861 1036 894 1436">Data Analysis Tools</td></tr> </tbody> </table>	#	Requirement Description	F412-1	Planning Staff	F412-2	Planning Facilities	F412-3	Simulation Capabilities	F412-4	Facilities For Operational Exercises And Data Collection	F412-5	Data Analysis Tools	1) Coordination With And Recommendations To HA 2) Exercise Plans And Results 3) Validated System/Force Requirements 4) Validated Operational Concepts 5) Baseline Rules Of Engagement 6) Approved Decision Aids And Procedures
#	Requirement Description													
F412-1	Planning Staff													
F412-2	Planning Facilities													
F412-3	Simulation Capabilities													
F412-4	Facilities For Operational Exercises And Data Collection													
F412-5	Data Analysis Tools													

INPUT	F4121 - CONDUCT REQUIREMENTS PLANNING	OUTPUT								
<p>1) Command Policy/Guidance For Requirements Planning</p> <p>2) Authority For Requirements Planning</p> <p>3) Approval Of Recommendations By HA</p> <p>4) Threat Evaluation</p>	<p>Description: This staff function involves analysis of system and force requirements and potential solutions leading to definition and validation of statements of required operational capabilities for the strategic ballistic missile defense mission area. The function is conducted in accordance with command policy/guidance and delegated authorities for system and force planning.</p> <table border="1" data-bbox="486 1009 678 1474"> <thead> <tr> <th data-bbox="486 1009 518 1431">#</th><th data-bbox="518 1009 678 1431">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="551 1157 584 1431">F4121-1</td><td data-bbox="551 1157 584 1305">Planning Staff</td></tr> <tr> <td data-bbox="616 1157 649 1431">F4121-2</td><td data-bbox="616 1157 649 1305">Planning Facilities</td></tr> <tr> <td data-bbox="682 1157 714 1431">F4121-3</td><td data-bbox="682 1157 714 1305">Channels To Obtain Validation From HA</td></tr> </tbody> </table>	#	Requirement Description	F4121-1	Planning Staff	F4121-2	Planning Facilities	F4121-3	Channels To Obtain Validation From HA	<p>1) Statements Of Required Operational Capabilities</p>
#	Requirement Description									
F4121-1	Planning Staff									
F4121-2	Planning Facilities									
F4121-3	Channels To Obtain Validation From HA									

INPUT	F4122 - CONDUCT OPERATIONAL PLANNING	OUTPUT								
<p>1) Command Policy/Guidance For Operational Planning</p> <p>2) Authority To Conduct Operational Planning</p> <p>3) Approvals From HA</p> <p>4) Threat Evaluation</p> <p>5) External Command And Control Reports And Plans</p> <p>6) Operational Exercise Results</p>	<p>Description: This staff function involves the formulation, evaluation, and coordination of concepts of operation, and the development and promulgation of formal operational plans for validated concepts of operation. The function encompasses concepts and plans for peacetime operations, crisis/alert operations, engagement operations, continuity of operations, and recovery and reconstitution.</p> <p># Requirement Description</p> <table> <tbody> <tr> <td>F4122-1</td> <td>Planning Staff</td> </tr> <tr> <td>F4122-2</td> <td>Planning Facilities</td> </tr> <tr> <td>F4122-3</td> <td>Simulation Facilities</td> </tr> <tr> <td>F4122-4</td> <td>Means To Obtain Validation Of Concepts Of Operation</td> </tr> </tbody> </table>	F4122-1	Planning Staff	F4122-2	Planning Facilities	F4122-3	Simulation Facilities	F4122-4	Means To Obtain Validation Of Concepts Of Operation	<p>1) Validated Concepts Of Operation</p> <p>2) Peacetime Operational Plans</p> <p>3) Crisis/Alert Operational Plans</p> <p>4) Engagement Operational Concepts And Plans</p> <p>5) Continuity Of Operational Plans</p> <p>6) Recovery/Reconstitution Concept And Plans</p>
F4122-1	Planning Staff									
F4122-2	Planning Facilities									
F4122-3	Simulation Facilities									
F4122-4	Means To Obtain Validation Of Concepts Of Operation									

INPUT	F4123 - DEVELOP BASELINE ROEs	OUTPUT												
<ul style="list-style-type: none"> 1) Command Policy/Guidance For ROE Planning 2) Authority For ROE Planning 3) Approvals From HA 4) Validated Operational Concepts 5) Threat Evaluation 6) Operational Exercise Results 	<p>Description: This function encompasses deliberate activities and processes leading to the dissemination of formal baseline rules of engagement (ROEs) in the format in which they will be used by personnel and/or machines of the SDS. ROEs set forth the conditions under which engagements can be initiated and continued. The function involves identification for new or revised ROEs, formulation and evaluation of ROE constructs, coordination to obtain validation from HA, and input and dissemination of validated ROEs to positive control and battle management functions.</p> <table border="1" data-bbox="616 1009 959 1453"> <thead> <tr> <th data-bbox="616 1009 649 1305">#</th><th data-bbox="616 1009 649 1305">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="665 1009 698 1305">F4123-1</td><td data-bbox="665 1009 698 1305">Planning Staff</td></tr> <tr> <td data-bbox="714 1009 747 1305">F4123-2</td><td data-bbox="714 1009 747 1305">Planning Facilities</td></tr> <tr> <td data-bbox="763 1009 796 1305">F4123-3</td><td data-bbox="763 1009 796 1305">Simulation Facilities</td></tr> <tr> <td data-bbox="845 1009 878 1305">F4123-4</td><td data-bbox="845 1009 878 1305">Process To Obtain Validation Of ROEs From HA</td></tr> <tr> <td data-bbox="894 1009 926 1305">F4123-5</td><td data-bbox="894 1009 926 1305">Interface And High Assurance Communications For Dissemination Of RoE Constructs To Battle Managers</td></tr> </tbody> </table>	#	Requirement Description	F4123-1	Planning Staff	F4123-2	Planning Facilities	F4123-3	Simulation Facilities	F4123-4	Process To Obtain Validation Of ROEs From HA	F4123-5	Interface And High Assurance Communications For Dissemination Of RoE Constructs To Battle Managers	<ul style="list-style-type: none"> 1) Baseline ROE Recommendations 2) Validated Baseline ROEs
#	Requirement Description													
F4123-1	Planning Staff													
F4123-2	Planning Facilities													
F4123-3	Simulation Facilities													
F4123-4	Process To Obtain Validation Of ROEs From HA													
F4123-5	Interface And High Assurance Communications For Dissemination Of RoE Constructs To Battle Managers													

<p>INPUT</p> <ul style="list-style-type: none"> 1) Validated Operational Concepts 2) Validated Baseline ROEs 3) Approvals From HA 4) Threat Evaluation 5) Operational Exercise Results 	<p>F4124 - DEVELOP/REFINE DECISION AIDS AND PROCEDURES</p> <p>Description: This function encompasses activities and processes to develop and refine decision aids and procedures for conduct of exercises, positive control, system management control, and situation monitoring and assessment. It involves identification of needs and opportunities for enhancements, formulation and evaluation of new and revised decision aids and procedures, coordination to obtain approval or validation, and installation of decision aids and promulgation of procedures.</p>	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) Recommended Procedures 2) Approved Decision Aids 3) Validated Procedures
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INPUT	F4125 - CONDUCT OPERATIONAL EXERCISES	OUTPUT																				
<ul style="list-style-type: none"> 1) Validated Operational Concepts 2) Validated Baseline ROEs 3) Approved Decision Aids 4) Validated Procedures 5) HA Approval Of Exercise Plans 6) Threat Evaluation 	<p>Description: This function encompasses activities associated with preparing for, conducting, and developing findings from operational exercises of personnel, plans, procedures, software, and/or equipment of the SDS. The function involves formulation of exercise objectives, development and coordination of exercise plans, as-needed configuration of systems and facilities to support exercises, exercise conduct and data collection, and analysis and reporting of findings.</p> <table border="1" data-bbox="567 988 1142 1474"> <thead> <tr> <th data-bbox="567 988 600 1305">#</th><th data-bbox="567 988 600 1305">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="625 988 657 1305">F4125-1</td><td data-bbox="625 988 657 1305">Planning Staff</td></tr> <tr> <td data-bbox="682 988 714 1305">F4125-2</td><td data-bbox="682 988 714 1305">Planning Facilities</td></tr> <tr> <td data-bbox="739 988 771 1305">F4125-3</td><td data-bbox="739 988 771 1305">Process And Means For Coordination Of Exercise Plans</td></tr> <tr> <td data-bbox="796 988 829 1305">F4125-4</td><td data-bbox="796 988 829 1305">Simulation Facilities For Exercise Support</td></tr> <tr> <td data-bbox="853 988 886 1305">F4125-5</td><td data-bbox="853 988 886 1305">Capability To Configure SDS Systems And Facilities For Support Of Exercises</td></tr> <tr> <td data-bbox="910 988 943 1305">F4125-6</td><td data-bbox="910 988 943 1305">Operational Personnel To Participate In Exercises</td></tr> <tr> <td data-bbox="967 988 1000 1305">F4125-7</td><td data-bbox="967 988 1000 1305">Capability To Collect And Reduce Exercise Data</td></tr> <tr> <td data-bbox="1024 988 1057 1305">F4125-8</td><td data-bbox="1024 988 1057 1305">Tools For Analysis Of Exercise Data</td></tr> <tr> <td data-bbox="1082 988 1114 1305">F4125-9</td><td data-bbox="1082 988 1114 1305">Means To Report Exercise Results</td></tr> </tbody> </table>	#	Requirement Description	F4125-1	Planning Staff	F4125-2	Planning Facilities	F4125-3	Process And Means For Coordination Of Exercise Plans	F4125-4	Simulation Facilities For Exercise Support	F4125-5	Capability To Configure SDS Systems And Facilities For Support Of Exercises	F4125-6	Operational Personnel To Participate In Exercises	F4125-7	Capability To Collect And Reduce Exercise Data	F4125-8	Tools For Analysis Of Exercise Data	F4125-9	Means To Report Exercise Results	<ul style="list-style-type: none"> 1) Coordination Of Exercise Plans 2) Final Approved Exercise Plans 3) Reports Of Exercise Results
#	Requirement Description																					
F4125-1	Planning Staff																					
F4125-2	Planning Facilities																					
F4125-3	Process And Means For Coordination Of Exercise Plans																					
F4125-4	Simulation Facilities For Exercise Support																					
F4125-5	Capability To Configure SDS Systems And Facilities For Support Of Exercises																					
F4125-6	Operational Personnel To Participate In Exercises																					
F4125-7	Capability To Collect And Reduce Exercise Data																					
F4125-8	Tools For Analysis Of Exercise Data																					
F4125-9	Means To Report Exercise Results																					

INPUT	F413 - PROVIDE POSITIVE CONTROL	OUTPUT																
1) National Policy 2) SDS Mission Preferences 3) Baseline Defense Preferences 4) Command Policy/Guidance For Positive Control 5) Delegated Decision Authority 6) Validated Operational Concepts 7) Baseline ROEs 8) Approved Decision Aids 9) Validated Procedures 10) Approval/Direction From HA 11) Situation Data 12) Attack Warning And Assessment 13) External C2 Reports And Plans 14) Engagement Strategy Nomination	<p>Description: This function encompasses the processes and means to maintain continuous human positive control of the SDS and its operation in accordance with national policy, baseline defense preferences, applicable command policy/guidance, delegated decision authority, validated operational concepts, ROEs, validated procedures, and approvals and direction from HA. The function includes revision of baseline ROEs, adjustment of baseline defense preferences, adjustment of system mode, approval or override of engagement strategy nominations, and continuity of positive control.</p> <table border="0"> <thead> <tr> <th data-bbox="649 1030 670 1453">#</th> <th data-bbox="649 1009 670 1347">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="687 1009 708 1453">F413-1</td> <td data-bbox="687 1009 708 1347">Qualified Positive Control Teams</td> </tr> <tr> <td data-bbox="727 1009 749 1453">F413-2</td> <td data-bbox="727 1009 749 1347">Primary And Alternate Positive Control Cells</td> </tr> <tr> <td data-bbox="768 1009 789 1453">F413-3</td> <td data-bbox="768 1009 789 1347">Man-machine Interfaces To SDS Battle Management</td> </tr> <tr> <td data-bbox="809 1009 830 1453">F413-4</td> <td data-bbox="809 1009 830 1347">Communications With HA</td> </tr> <tr> <td data-bbox="850 1009 871 1453">F413-5</td> <td data-bbox="850 1009 871 1347">Communications With Other U&S Commands</td> </tr> <tr> <td data-bbox="891 1009 912 1453">F413-6</td> <td data-bbox="891 1009 912 1347">Communications Among Positive Control Cells</td> </tr> <tr> <td data-bbox="931 1009 953 1453">F413-7</td> <td data-bbox="931 1009 953 1347">Interface With Situation Monitoring And Assessment</td> </tr> </tbody> </table>	#	Requirement Description	F413-1	Qualified Positive Control Teams	F413-2	Primary And Alternate Positive Control Cells	F413-3	Man-machine Interfaces To SDS Battle Management	F413-4	Communications With HA	F413-5	Communications With Other U&S Commands	F413-6	Communications Among Positive Control Cells	F413-7	Interface With Situation Monitoring And Assessment	1) Real-time ROE Recommendations To HA 2) ROE Revisions 3) Adjustments To Defense Preferences 4) System Mode Selections 5) Engagement Strategy Overrides
#	Requirement Description																	
F413-1	Qualified Positive Control Teams																	
F413-2	Primary And Alternate Positive Control Cells																	
F413-3	Man-machine Interfaces To SDS Battle Management																	
F413-4	Communications With HA																	
F413-5	Communications With Other U&S Commands																	
F413-6	Communications Among Positive Control Cells																	
F413-7	Interface With Situation Monitoring And Assessment																	

INPUT	F4131 - REVISE RULES OF ENGAGEMENT (ROEs)	OUTPUT																		
<p>1) Command Policy/Guidance For Positive Control</p> <p>2) Delegated Authority For Positive Control</p> <p>3) Validated Procedures For Positive Control</p> <p>4) Baseline ROEs</p> <p>5) Approvals And Direction From HA</p> <p>6) Situation Assessment</p> <p>7) External C2 Reports, Requests, And Plans</p> <p>Description: This positive control function encompasses processes and means to recommend expeditious changes in baseline ROEs and to implement changes as directed by HA. It involves monitoring the situation, including reports and requests from other U&S Commanders, identifying potential problems with baseline ROEs, and recommending expeditious changes for HA consideration. It also involves implementation of expeditious ROE changes as approved or otherwise directed by HA, including revision of parameters in ROE constructs, masking or unmasking of ROE constructs, dissemination of changes to alternate positive control cells and automated battle managers, and reporting completion of ROE change implementations.</p> <table border="0"> <thead> <tr> <th data-bbox="670 994 703 1374">#</th> <th data-bbox="670 952 703 1374">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="736 952 768 1374">F4131-1</td> <td data-bbox="736 952 768 1374">Qualified Positive Control Teams</td> </tr> <tr> <td data-bbox="801 952 833 1374">F4131-2</td> <td data-bbox="801 952 833 1374">Positive Control Cell Facilities</td> </tr> <tr> <td data-bbox="866 952 899 1374">F4131-3</td> <td data-bbox="866 952 899 1374">Communications With HA</td> </tr> <tr> <td data-bbox="931 952 964 1374">F4131-4</td> <td data-bbox="931 952 964 1374">Means To Obtain Situation Assessment</td> </tr> <tr> <td data-bbox="997 952 1029 1374">F4131-5</td> <td data-bbox="997 952 1029 1374">Means To Receive Reports And Requests From Other U&S Commands</td> </tr> <tr> <td data-bbox="1062 952 1095 1374">F4131-6</td> <td data-bbox="1062 952 1095 1374">Quick-look ROE Assessment Capabilities</td> </tr> <tr> <td data-bbox="1127 952 1160 1374">F4131-7</td> <td data-bbox="1127 952 1160 1374">Communications With Alternate Positive Control Cells</td> </tr> <tr> <td data-bbox="1192 952 1225 1374">F4131-8</td> <td data-bbox="1192 952 1225 1374">Man-machine Interface To SDS Battle Management</td> </tr> <tr> <td data-bbox="1258 952 1290 1374">F4131-9</td> <td data-bbox="1258 952 1290 1374">High Assurance Communications For ROE Change Dissemination</td> </tr> </tbody> </table>	#	Requirement Description	F4131-1	Qualified Positive Control Teams	F4131-2	Positive Control Cell Facilities	F4131-3	Communications With HA	F4131-4	Means To Obtain Situation Assessment	F4131-5	Means To Receive Reports And Requests From Other U&S Commands	F4131-6	Quick-look ROE Assessment Capabilities	F4131-7	Communications With Alternate Positive Control Cells	F4131-8	Man-machine Interface To SDS Battle Management	F4131-9	High Assurance Communications For ROE Change Dissemination
#	Requirement Description																			
F4131-1	Qualified Positive Control Teams																			
F4131-2	Positive Control Cell Facilities																			
F4131-3	Communications With HA																			
F4131-4	Means To Obtain Situation Assessment																			
F4131-5	Means To Receive Reports And Requests From Other U&S Commands																			
F4131-6	Quick-look ROE Assessment Capabilities																			
F4131-7	Communications With Alternate Positive Control Cells																			
F4131-8	Man-machine Interface To SDS Battle Management																			
F4131-9	High Assurance Communications For ROE Change Dissemination																			

INPUT	F4132 - ADJUST DEFENSE PREFERENCES	OUTPUT																		
<p>1) Command Policy/Guidance For Positive Control</p> <p>2) Delegated Authority For Positive Control</p> <p>3) Validated Procedures For Positive Control</p> <p>4) Baseline Defense Preferences</p> <p>5) Guidance/Direction From HA</p> <p>6) Situation Assessment</p> <p>7) External Reports And Plans For Defended Assets</p>	<p>Description: This positive control function encompasses processes and means for implementation and dissemination of defense preference weight changes as directed by HA and, to the extent allowed, in response to situation dynamics. It involves receipt of defense preference guidance from HA, establishing/entering baseline land area and asset category preferences, adjusting preference weights in response to situation dynamics (e.g., force generation activities, missile launches, asset destruction), dissemination of preference weight changes to alternate positive control cells and to SDS battle managers, and reporting of defense preference change implementations.</p> <table border="1"> <thead> <tr> <th data-bbox="665 1036 698 1438">#</th><th data-bbox="665 1026 698 1343">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="747 1374 780 1438">F4132-1</td><td data-bbox="747 984 780 1343">Qualified Positive Control Teams</td></tr> <tr> <td data-bbox="796 1374 829 1438">F4132-2</td><td data-bbox="796 1026 829 1343">Positive Control Cell Facilities</td></tr> <tr> <td data-bbox="845 1374 878 1438">F4132-3</td><td data-bbox="845 1068 878 1343">Communications With HA</td></tr> <tr> <td data-bbox="894 1374 926 1438">F4132-4</td><td data-bbox="894 751 926 1343">Means To Flowdown Higher Level Defense Preference Guidance To Specific Land Area And Asset Preference Weights</td></tr> <tr> <td data-bbox="943 1374 975 1438">F4132-5</td><td data-bbox="943 772 975 1343">Means To Obtain Real-time Defended Asset Situation/Status Data And To Adjust Preference Weights Accordingly</td></tr> <tr> <td data-bbox="992 1374 1024 1438">F4132-6</td><td data-bbox="992 1026 1024 1343">Communications With Alternate Positive Control Cells</td></tr> <tr> <td data-bbox="1041 1374 1073 1438">F4132-7</td><td data-bbox="1041 730 1073 1343">Man-machine Interface To Automated Battle Management</td></tr> <tr> <td data-bbox="1090 1374 1122 1438">F4132-8</td><td data-bbox="1090 730 1122 1343">High Assurance Communications For Dissemination Of Defense Preference Weight Changes To Battle Managers</td></tr> </tbody> </table>	#	Requirement Description	F4132-1	Qualified Positive Control Teams	F4132-2	Positive Control Cell Facilities	F4132-3	Communications With HA	F4132-4	Means To Flowdown Higher Level Defense Preference Guidance To Specific Land Area And Asset Preference Weights	F4132-5	Means To Obtain Real-time Defended Asset Situation/Status Data And To Adjust Preference Weights Accordingly	F4132-6	Communications With Alternate Positive Control Cells	F4132-7	Man-machine Interface To Automated Battle Management	F4132-8	High Assurance Communications For Dissemination Of Defense Preference Weight Changes To Battle Managers	<p>1) Defense Preference Weight Changes To Alternate Positive Control Cells And SDS Battle Managers</p> <p>2) Defense Preference Change Implementation Completion Reports</p>
#	Requirement Description																			
F4132-1	Qualified Positive Control Teams																			
F4132-2	Positive Control Cell Facilities																			
F4132-3	Communications With HA																			
F4132-4	Means To Flowdown Higher Level Defense Preference Guidance To Specific Land Area And Asset Preference Weights																			
F4132-5	Means To Obtain Real-time Defended Asset Situation/Status Data And To Adjust Preference Weights Accordingly																			
F4132-6	Communications With Alternate Positive Control Cells																			
F4132-7	Man-machine Interface To Automated Battle Management																			
F4132-8	High Assurance Communications For Dissemination Of Defense Preference Weight Changes To Battle Managers																			

INPUT	F4133 - ADJUST SYSTEM MODE	OUTPUT
<p>1) Command Policy/Guidance For Positive Control</p> <p>2) Delegated Authority For Positive Control</p> <p>3) Validated Procedures For Positive Control</p> <p>4) Baseline And Revised ROEs</p> <p>5) Baseline And Revised Defense Preferences</p> <p>6) Approval/Direction From HA</p> <p>7) Situation Summaries</p> <p>8) Warning And Assessment Of Attack</p>	<p>Description: This positive control function encompasses processes and means to select and change the SDS mode, including changes in system alert levels and enablement/termination of countermeasure and engagement actions. The function involves monitoring of the situation with respect to system mode selection criteria, recommending mode changes to HA as time allows, verifying conditional authority to change system mode in emergency conditions, adjusting the mode in accordance with criteria or as directed by HA, entering and disseminating mode selection changes to alternate positive control cells and SDS battle managers, and reporting implementation of system mode changes.</p>	<p>1) System Mode Change Recommendations To HA</p> <p>2) Mode Changes To Alternate Positive Control Cells And SDS Battle Managers</p> <p>3) Mode Change Implementation Completion Reports</p>

INPUT	F4134 - APPROVE/OVERRIDE ENGAGEMENT STRATEGY SELECTION	OUTPUT																
<p>1) Command Policy/Guidance For Positive Control 2) Delegated Authority For Positive Control 3) Validated Procedures For Positive Control 4) Baseline And Revised ROEs 5) Baseline And Revised Defense Preferences 6) System Mode Selection 7) Situation Assessment 8) Engagement Strategy Nomination</p> <p>Description: This positive control function encompasses processes and means to ensure engagement strategy selections by SDS battle management are valid and, if not, to override such selections with alternate strategy selections. The function is triggered by receipt of an engagement strategy nomination from SDS battle management and includes quick-look assessment of the validity and optimality of that selection, implicit approval if the nominated selection is satisfactory or override if not, and reporting of the current engagement strategy selection. In the case where an override is warranted, the function also involves quick-look review of alternate strategy options for validity and optimality, selection and entry of an alternate strategy selection, and dissemination of the override strategy to SDS battle managers.</p> <table border="1"> <thead> <tr> <th data-bbox="804 967 829 1463">#</th><th data-bbox="804 1030 829 1358">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="853 998 878 1495">F4134-1</td><td data-bbox="853 998 878 1358">Qualified Positive Control Teams</td></tr> <tr> <td data-bbox="902 1062 926 1495">F4134-2</td><td data-bbox="902 1062 926 1358">Positive Control Cell Facilities</td></tr> <tr> <td data-bbox="951 914 975 1495">F4134-3</td><td data-bbox="951 914 975 1358">Means To Receive Situation Assessments</td></tr> <tr> <td data-bbox="1000 1400 1024 1495">F4134-4</td><td data-bbox="1000 830 1090 1358">Decision Aids And/Or Procedures For Quick-look Evaluation Of Engagement Strategy Selections And Options</td></tr> <tr> <td data-bbox="1114 1400 1139 1495">F4134-5</td><td data-bbox="1114 1400 1139 1358">Communications With Alternate Positive Control Cells</td></tr> <tr> <td data-bbox="1163 1400 1188 1495">F4134-6</td><td data-bbox="1163 1400 1188 1358">Man-machine Interface To Automated Battle Management</td></tr> <tr> <td data-bbox="1212 1400 1237 1495">F4134-7</td><td data-bbox="1212 1400 1269 1358">High Assurance Communications With SDS Battle Managers</td></tr> <tr> <td data-bbox="1294 1400 1318 1495">F4134-8</td><td data-bbox="1294 1400 1351 1358">Communications With HA (And Possibly U&S Commands)</td></tr> </tbody> </table>	#	Requirement Description	F4134-1	Qualified Positive Control Teams	F4134-2	Positive Control Cell Facilities	F4134-3	Means To Receive Situation Assessments	F4134-4	Decision Aids And/Or Procedures For Quick-look Evaluation Of Engagement Strategy Selections And Options	F4134-5	Communications With Alternate Positive Control Cells	F4134-6	Man-machine Interface To Automated Battle Management	F4134-7	High Assurance Communications With SDS Battle Managers	F4134-8	Communications With HA (And Possibly U&S Commands)
#	Requirement Description																	
F4134-1	Qualified Positive Control Teams																	
F4134-2	Positive Control Cell Facilities																	
F4134-3	Means To Receive Situation Assessments																	
F4134-4	Decision Aids And/Or Procedures For Quick-look Evaluation Of Engagement Strategy Selections And Options																	
F4134-5	Communications With Alternate Positive Control Cells																	
F4134-6	Man-machine Interface To Automated Battle Management																	
F4134-7	High Assurance Communications With SDS Battle Managers																	
F4134-8	Communications With HA (And Possibly U&S Commands)																	

INPUT	F4135 - MAINTAIN CONTINUITY OF POSITIVE CONTROL	OUTPUT
<p>1) Command Policy/Guidance For Positive Control</p> <p>2) Delegated Authority For Positive Control</p> <p>3) Validated Procedures For Positive Control</p> <p>4) Continuity Of Operations Plan</p> <p>5) Baseline And Revised ROEs</p> <p>6) Baseline And Revised Defense Preferences</p> <p>7) Current System Mode Selection</p> <p>8) Current Engagement Strategy Selection</p> <p>9) Situation Assessments Relevant To Relocation And Devolution Of Positive Control</p>	<p>Description: This function encompasses the processes and means to ensure that there is at all times one valid team and cell exercising positive control over the SDS, and that the acting cell is recognized as such by the system and external interfaces. The function includes implementation of day-to-day continuity of positive control, relocation of positive control, and devolution of positive control in accordance with continuity of operations plans and validated procedures.</p>	<p>1) One Valid And Recognized Team And Cell Exercising Positive Control Over The SDS</p> <p>1) Primary And Alternate Positive Control Teams</p> <p>F4135-1 Primary And Alternate Positive Control Cell Facilities (Including Personnel Transportation)</p> <p>F4135-2 Communications With SDS Commander</p> <p>F4135-3 Communications Among Primary And Alternate Positive Control Cells</p> <p>F4135-4 Communications With HA, U&S Commands, And Subordinate Commands</p> <p>F4135-5 Interfaces To Situation Assessment And Battle Management Functions Of The SDS</p>

INPUT	OUTPUT										
<p style="text-align: center;">F414 - PROVIDE SYSTEM MANAGEMENT CONTROL</p> <p>Description: This command and control function encompasses the processes and means for high level human control of the subordinate SDS system management activities, both the fully automated management activities and those involving humans. The functions includes establishment of surveillance and discrimination (S&D) criteria, establishment of system configuration criteria, definition of recovery and reconstitution priorities, and continuity of system management control.</p> <table> <thead> <tr> <th data-bbox="621 1058 649 1438">#</th> <th data-bbox="621 1030 649 1381">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="670 1381 698 1438">F414-1</td> <td data-bbox="670 967 698 1353">System Management Control Teams</td> </tr> <tr> <td data-bbox="719 1381 747 1438">F414-2</td> <td data-bbox="719 819 747 1353">Primary And Alternate System Management Control Facilities</td> </tr> <tr> <td data-bbox="768 1381 796 1438">F414-3</td> <td data-bbox="768 819 796 1353">Interfaces To System Mode Selection And Situation Assessment Functions Of The SDS</td> </tr> <tr> <td data-bbox="817 1381 845 1438">F414-4</td> <td data-bbox="817 834 845 1353">Means To Receive External C2 Reports And Plans</td> </tr> </tbody> </table>	#	Requirement Description	F414-1	System Management Control Teams	F414-2	Primary And Alternate System Management Control Facilities	F414-3	Interfaces To System Mode Selection And Situation Assessment Functions Of The SDS	F414-4	Means To Receive External C2 Reports And Plans	<p>1) S&D Criteria 2) System Configuration Criteria 3) Recovery And Reconstitution Priorities</p>
#	Requirement Description										
F414-1	System Management Control Teams										
F414-2	Primary And Alternate System Management Control Facilities										
F414-3	Interfaces To System Mode Selection And Situation Assessment Functions Of The SDS										
F414-4	Means To Receive External C2 Reports And Plans										

INPUT	F4141 - ESTABLISH SURVEILLANCE AND DISCRIMINATION CRITERIA	OUTPUT
1) Command Policy/Guidance For System Management Control 2) Delegated Authority For System Management Control 3) Validated Procedures For System Management Control 4) System Mode Selection 5) Situation Data	<p>Description: This command and control function encompasses the processes and means to establish and disseminate high level criteria to be followed by surveillance and discrimination human and automated managers. S&D criteria to be established include but are not limited to S&D management reporting requirements, S&D resource allocation criteria, sensor detection and false alarm rate objectives, and criteria for use of expendable S&D assets. The function involves assessment of the need for revised S&D criteria, establishing/setting the new criteria, and disseminating the criteria changes to system management nodes.</p>	1) S&D Management Reporting Requirements 2) S&D Resource Allocation Criteria 3) Detection And False Alarm Rate Objectives 4) Criteria For Use Of Expendable S&D Assets 5) Other S&D Management Criteria As Needed

#	Requirement Description
F4141-1	System Management Control Teams
F4141-2	System Management Control Facilities
F4141-3	Interfaces To System Mode Selection And Situation Assessment Functions Of The SDS
F4141-4	Decision Aids And Analytical Tools For Assessing Alternative S&D Criteria

INPUT	F4142 - ESTABLISH SYSTEM CONFIGURATION CRITERIA	OUTPUT												
1) Command Policy/Guidance For System Management Control 2) Delegated Authority For System Management Control 3) Validated Procedures For System Management Control 4) Situation Data 5) System Mode Selection	<p>Description: This command and control function encompasses the processes and means to establish and disseminate criteria to be followed in the management of the operational and support configuration of the SDS. System configuration criteria include but are not limited to space/time coverage criteria, communications management criteria, criteria for use of reserve and spare assets, and system status reporting requirements. The function involves assessment of the need for revised system configuration criteria, establishment of the new criteria, and dissemination of the criteria changes to operational configuration management and system support functions of the SDS.</p> <table border="1"> <thead> <tr> <th data-bbox="714 1030 747 1453">#</th><th data-bbox="714 1453 780 1997">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="780 1030 829 1453">F4142-1</td><td data-bbox="780 1453 845 1997">System Management Control Teams</td></tr> <tr> <td data-bbox="829 1030 878 1453">F4142-2</td><td data-bbox="829 1453 894 1997">Primary And Alternate System Management Control Facilities</td></tr> <tr> <td data-bbox="894 1030 943 1453">F4142-3</td><td data-bbox="894 1453 959 1997">Interfaces With System Mode Selection And Situation Assessment Functions Of The SDS</td></tr> <tr> <td data-bbox="959 1030 1008 1453">F4142-4</td><td data-bbox="959 1453 1024 1997">Decision Aids And Analytical Tools For Assessment Of Alternative System Configuration Criteria</td></tr> <tr> <td data-bbox="1024 1030 1073 1453">F4142-5</td><td data-bbox="1024 1453 1090 1997">Communications And Interfaces For Dissemination Of Criteria Changes To Operational Configuration Management And System Support Nodes Of The SDS</td></tr> </tbody> </table>	#	Requirement Description	F4142-1	System Management Control Teams	F4142-2	Primary And Alternate System Management Control Facilities	F4142-3	Interfaces With System Mode Selection And Situation Assessment Functions Of The SDS	F4142-4	Decision Aids And Analytical Tools For Assessment Of Alternative System Configuration Criteria	F4142-5	Communications And Interfaces For Dissemination Of Criteria Changes To Operational Configuration Management And System Support Nodes Of The SDS	
#	Requirement Description													
F4142-1	System Management Control Teams													
F4142-2	Primary And Alternate System Management Control Facilities													
F4142-3	Interfaces With System Mode Selection And Situation Assessment Functions Of The SDS													
F4142-4	Decision Aids And Analytical Tools For Assessment Of Alternative System Configuration Criteria													
F4142-5	Communications And Interfaces For Dissemination Of Criteria Changes To Operational Configuration Management And System Support Nodes Of The SDS													

INPUT	F4143 - DEFINE SYSTEM RECOVERY AND RECONSTITUTION PRIORITIES	OUTPUT														
<ul style="list-style-type: none"> 1) Command Policy/Guidance For System Management Control 2) Delegated Authority For System Management Control 3) Validated Procedures For System Management Control 4) Situation Data 5) External C2 Reports And Plans 	<p>Description: This command and control function encompasses processes and means to set recovery and reconstitution priorities to be followed, respectively, by the operational configuration management and reconstitution functions of the SDS. The function involves monitoring the situation with respect to recovery and reconstitution, establishing priorities, and disseminating the priorities to operational configuration management and reconstitution nodes of the SDS.</p> <table border="1" data-bbox="567 967 1078 1459"> <thead> <tr> <th data-bbox="567 967 589 1459">#</th><th data-bbox="567 967 1078 1459">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="616 967 638 1459">F4143-1</td><td data-bbox="616 967 1078 1459">System Management Control Teams</td></tr> <tr> <td data-bbox="665 967 687 1459">F4143-2</td><td data-bbox="665 967 1078 1459">Primary And Alternate System Management Control Facilities</td></tr> <tr> <td data-bbox="747 967 768 1459">F4143-3</td><td data-bbox="747 967 1078 1459">Interfaces With The System Mode Selection And Situation Assessment Functions Of The SDS</td></tr> <tr> <td data-bbox="829 967 850 1459">F4143-4</td><td data-bbox="829 967 1078 1459">Means To Receive External C2 Reports And Plans</td></tr> <tr> <td data-bbox="878 967 899 1459">F4143-5</td><td data-bbox="878 967 1078 1459">Decision Aids And Analytical Tools For Assessment Of Alternative Recovery And Reconstitution Priorities</td></tr> <tr> <td data-bbox="926 967 948 1459">F4143-6</td><td data-bbox="926 967 1078 1459">Communications And Interfaces With Operational Configuration Management And Reconstitution Nodes Of The SDS</td></tr> </tbody> </table>	#	Requirement Description	F4143-1	System Management Control Teams	F4143-2	Primary And Alternate System Management Control Facilities	F4143-3	Interfaces With The System Mode Selection And Situation Assessment Functions Of The SDS	F4143-4	Means To Receive External C2 Reports And Plans	F4143-5	Decision Aids And Analytical Tools For Assessment Of Alternative Recovery And Reconstitution Priorities	F4143-6	Communications And Interfaces With Operational Configuration Management And Reconstitution Nodes Of The SDS	<ul style="list-style-type: none"> 1) System Recovery Priorities 2) System Reconstitution Priorities
#	Requirement Description															
F4143-1	System Management Control Teams															
F4143-2	Primary And Alternate System Management Control Facilities															
F4143-3	Interfaces With The System Mode Selection And Situation Assessment Functions Of The SDS															
F4143-4	Means To Receive External C2 Reports And Plans															
F4143-5	Decision Aids And Analytical Tools For Assessment Of Alternative Recovery And Reconstitution Priorities															
F4143-6	Communications And Interfaces With Operational Configuration Management And Reconstitution Nodes Of The SDS															

INPUT	OUTPUT
<p>F4144 - MAINTAIN CONTINUITY OF SYSTEM MANAGEMENT CONTROL</p> <p>Description: The function encompasses the processes and means to ensure there exists a valid and recognized set of nodes executing system management control of the SDS. The function includes implementation of day-to-day continuity of system management control, relocation of system management control, and devolution of system management control.</p> <p>1) Command Policy/Guidance For System Management Control 2) Delegated Authority For System Management Control 3) Validated Procedures For System Management Control 4) Continuity Of Operations Plan 5) Baseline And Revised S&D Criteria 6) Baseline And Revised System Configuration Criteria 7) Current Recovery And Reconstitution Priorities 8) Situation Data</p>	<p>1) One Valid, Recognized Set Of System Management Control Nodes</p> <p># Requirement Description</p> <p>F4144-1 Primary And Alternate System Management Control Teams</p> <p>F4144-2 Primary And Alternate System Management Control Facilities (Including Personnel Transportation)</p> <p>F4144-3 Procedures For Day-to-day Continuity Of System Management Control</p> <p>F4144-4 Procedures For Relocation Of System Management Control</p> <p>F4144-5 Procedures For Devolution Of System Management Control</p> <p>F4144-6 Interface To The Situation Assessment Function</p>

INPUT	F42 - CONDUCT SURVEILLANCE AND DISCRIMINATION	OUTPUT										
1) System Mode Selection 2) S&D Criteria 3) Situation Data 4) System Status Data 5) Kill Assessment Observables Collection Requests 6) Object And Event Observables 7) Background Environment Description	<p>Description: This high level function encompasses processes and organic means to obtain, and process into useful form, real time data on objects and events relevant to the SDS mission in accordance with the selected system mode and the surveillance and discrimination (S&D) criteria from the system management control function. The function includes managing S&D, obtaining and bulk processing observables, initiating and maintaining track files, classifying and identifying objects and events, and employing expendable S&D assets. Requirement Description</p> <table border="1"> <thead> <tr> <th data-bbox="621 1015 646 1431">#</th><th data-bbox="621 931 654 1326">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="687 1374 711 1431">F42-1</td><td data-bbox="687 825 711 1326">S&D Management Capabilities And Resources</td></tr> <tr> <td data-bbox="744 1374 768 1431">F42-2</td><td data-bbox="744 741 768 1326">S&D Observables Collection Elements And Resources</td></tr> <tr> <td data-bbox="801 1374 825 1431">F42-3</td><td data-bbox="801 1015 825 1326">Computational Resources</td></tr> <tr> <td data-bbox="858 1374 882 1431">F42-4</td><td data-bbox="858 720 907 1326">Communications And Interfaces With All Other Functions Of The Employ SDS Function</td></tr> </tbody> </table>	#	Requirement Description	F42-1	S&D Management Capabilities And Resources	F42-2	S&D Observables Collection Elements And Resources	F42-3	Computational Resources	F42-4	Communications And Interfaces With All Other Functions Of The Employ SDS Function	1) S&D Activity Reports 2) Object/Event Data 3) S&D Expenditures
#	Requirement Description											
F42-1	S&D Management Capabilities And Resources											
F42-2	S&D Observables Collection Elements And Resources											
F42-3	Computational Resources											
F42-4	Communications And Interfaces With All Other Functions Of The Employ SDS Function											

INPUT	OUTPUT						
<p>F421 - MANAGE SURVEILLANCE AND DISCRIMINATION</p> <p>1) System Mode Selection 2) S&D Criteria 3) Situation Data 4) S&D Expenditure Reports 5) Track File 6) System Status Data 7) Kill Assessment Observables Collection Requests</p>	<p>Description: This function encompasses the processes and means to to manage surveillance and discrimination to meet SDS requirements in accordance with the system mode selection, S&D criteria, kill assessment observables collection requests, and situation and other data. The function includes determining S&D requirements, assigning and tasking S&D resources, assigning and tasking object/event data reporting, authorizing use of expendable S&D assets, and maintaining continuity of S&D management.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F421-1</td> <td>S&D Management Resources (Personnel And Computational Resources)</td> </tr> <tr> <td>F421-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table> <p>1) S&D Activity Reports 2) S&D Control And Tasking</p>	#	Requirement Description	F421-1	S&D Management Resources (Personnel And Computational Resources)	F421-2	Host Facilities And/Or Platforms
#	Requirement Description						
F421-1	S&D Management Resources (Personnel And Computational Resources)						
F421-2	Host Facilities And/Or Platforms						

<p>INPUT</p> <ul style="list-style-type: none"> 1) S&D Management Reporting Requirements 2) System Mode Selection 3) Track File 4) Situation Data 5) S&D Expenditure Reports 6) S&D Activity Reports 	<p>F4211 - DETERMINE SURVEILLANCE AND DISCRIMINATION REQUIREMENTS</p> <p>Description: This function encompasses the processes and means to determine the S&D operational requirements so that S&D resources can be efficiently assigned and tasked. The function involves determining search volume coverage requirements, observables collection and processing requirements, and object/event data distribution requirements. The requirements are established at a system level and provide the guidelines for the subsequent assignment and tasking of S&D resources.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">#</th><th style="text-align: center;">Requirement Description</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">F4211-1</td><td>S&D Management Resources</td></tr> <tr> <td style="text-align: center;">F4211-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4211-1	S&D Management Resources	F4211-2	Host Facilities And/Or Platforms	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) S&D Requirements 2) S&D Reporting Requirements
#	Requirement Description							
F4211-1	S&D Management Resources							
F4211-2	Host Facilities And/Or Platforms							

INPUT	F4212 - ASSIGN AND TASK S&D RESOURCES	OUTPUT
1) S&D Resource Allocation Criteria 2) S&D Requirements 3) Track File 4) Situation Data 5) System Status Data 6) Kill Assessment Observables Collection Requests	<p>Description: This function encompasses the processes and means to assign and task search volume coverage and object-specific collection requirements among the S&D resources in order to conduct surveillance and discrimination of the inflight threat objects. This function involves partitioning the search volume coverages among the S&D resources in order to obtain favorable viewing angles of the threat objects and to avoid saturation of the S&D resources during peak processing times. This may require the function to determine the status and capability of the S&D resources and the space/time distribution of inflight threat objects. Object-specific collection requirements include such parameters as detection thresholds, filtering algorithms, and coordinate conversions. It is also necessary to provide S&D activity reports to other SDS functions.</p>	1) S&D Resource Taskings 2) S&D Activity Reports

INPUT	F4213 - ASSIGN AND TASK OBJECT/EVENT DATA REPORTING	OUTPUT
<p>1) S&D Reporting Requirements 2) S&D Resource Taskings 3) Track File 4) Situation Data 5) System Status Data</p>	<p>Description: This function encompasses the processes and means to assign and task the reporting of object and event data among the functions and elements of the SDS system in accordance with the S&D reporting requirements, S&D resource taskings, and situation and other data. This function involves partitioning the object/event data reporting tasks in order to avoid saturation of the SDS system resources during peak processing times. This may require the function to determine the availability and capability of communication and processing resources in the SDS system, as well as determine the required update rates and communication paths over which object and event data should be reported. It may also be necessary to provide alternate reporting paths in the event of damage or loss to communication and processing resources.</p>	<p>1) S&D Object/Event Data Reporting Taskings</p>

INPUT	F4214 - AUTHORIZE USE OF EXPENDABLE S&D ASSETS	OUTPUT						
1) Criteria For Use Of Expendable S&D Assets 2) S&D Resource Taskings 3) S&D Activity Reports 4) Situation Data 5) Track File	<p>Description: This function encompasses the processes and means to provide authorization for use of expendable S&D assets based on the S&D resource taskings and in accordance with the criteria for use of expendable S&D assets and situation assessment. The function involves identifying expendable S&D resource taskings, verifying satisfaction of utilization criteria, and providing authority to release the assets if the criteria are satisfied. The expendable S&D asset release authority is not a specific S&D asset tasking or launch directive; rather, it is a form of positive control for use of the expendable S&D assets.</p> <table> <thead> <tr> <th data-bbox="698 1036 719 1438">#</th> <th data-bbox="698 1036 763 1438">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="763 1036 784 1438">F4214-1</td> <td data-bbox="763 1036 784 1438">S&D Management Personnel Computational Resources</td> </tr> <tr> <td data-bbox="784 1036 817 1438">F4214-2</td> <td data-bbox="784 1036 817 1438">Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4214-1	S&D Management Personnel Computational Resources	F4214-2	Host Facilities And/Or Platforms	1) Expendable S&D Asset Use Authorizations
#	Requirement Description							
F4214-1	S&D Management Personnel Computational Resources							
F4214-2	Host Facilities And/Or Platforms							

INPUT	F4215 - MAINTAIN CONTINUITY OF S&D MANAGEMENT	OUTPUT						
<p>1) System Mode Selection 2) S&D Requirements 3) S&D Reporting Requirements 4) S&D Resource Taskings 5) S&D Data Reporting Taskings 6) Expendable S&D Asset Use 7) Authorizations 8) Situation Data 9) Track File</p>	<p>Description: This function encompasses the processes and means to maintain continuity of the S&D management function in order to provide reliable control and tasking to the S&D resources based on the S&D control and taskings and in accordance with the system mode selection and situation and other data. The function involves monitoring the status of S&D management nodes, identifying the need for transfer of S&D management functions, transferring functions to successor nodes, and advising the SDS structure of the new S&D management relationships.</p> <table> <thead> <tr> <th data-bbox="633 988 665 1431">#</th> <th data-bbox="633 988 665 1284">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="698 1358 731 1431">F4215-1</td> <td data-bbox="698 713 812 1284">Nodes With The Capability To Assume The Critical Functions Of Primary S&D Management Nodes (Including Personnel And/Or Computational Resources As Applicable To The Functions Subject To Transfer)</td> </tr> <tr> <td data-bbox="845 1358 878 1431">F4215-2</td> <td data-bbox="845 713 894 1284">Communications For Status Monitoring Among Primary And Alternate S&D Management Nodes</td> </tr> </tbody> </table>	#	Requirement Description	F4215-1	Nodes With The Capability To Assume The Critical Functions Of Primary S&D Management Nodes (Including Personnel And/Or Computational Resources As Applicable To The Functions Subject To Transfer)	F4215-2	Communications For Status Monitoring Among Primary And Alternate S&D Management Nodes	<p>1) S&D Management Function Transfers</p>
#	Requirement Description							
F4215-1	Nodes With The Capability To Assume The Critical Functions Of Primary S&D Management Nodes (Including Personnel And/Or Computational Resources As Applicable To The Functions Subject To Transfer)							
F4215-2	Communications For Status Monitoring Among Primary And Alternate S&D Management Nodes							

INPUT	F422 - OBTAIN AND PROCESS OBSERVABLES	OUTPUT								
1) S&D Control And Tasking 2) Background Environment Object/Event Observables System Status Data	<p>Description: This function encompasses the processes and means to operate the S&D collection assets in order to obtain and process observables into time-tagged sensor measurement reports. The function includes activities such as aligning the S&D platform, pointing and activating interactive discrimination subsystems, collecting the radiometric observables, and bulk filtering extraneous observables required to generate the sensor measurement reports on objects and events. The sensor measurement reports, as generated by this function, are not associated with an object in the track file. However, they are platform dependent reports and require time tags and either platform location information or platform identification from which the platform location can be computed by user functions.</p> <table> <thead> <tr> <th data-bbox="714 1020 736 1431">#</th><th data-bbox="714 1009 736 1315">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="763 1379 784 1463">F422-1</td><td data-bbox="763 724 845 1315">S&D Collection Assets (Including At Least Sensors Subsystems, But Also Possible Interactive Discrimination Subsystems)</td></tr> <tr> <td data-bbox="878 1379 899 1463">F422-2</td><td data-bbox="878 840 899 1315">Signal Processing/Bulk Filtering Components</td></tr> <tr> <td data-bbox="926 1379 948 1463">F422-3</td><td data-bbox="926 988 948 1315">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F422-1	S&D Collection Assets (Including At Least Sensors Subsystems, But Also Possible Interactive Discrimination Subsystems)	F422-2	Signal Processing/Bulk Filtering Components	F422-3	Host Facilities And/Or Platforms	1) Time-tagged Sensor Measurements Reports (Of Objects And NUDET Events)
#	Requirement Description									
F422-1	S&D Collection Assets (Including At Least Sensors Subsystems, But Also Possible Interactive Discrimination Subsystems)									
F422-2	Signal Processing/Bulk Filtering Components									
F422-3	Host Facilities And/Or Platforms									

INPUT	F4221 - OPERATE S&D COLLECTION ASSETS	OUTPUT										
1) Coverage taskings 2) System status data 3) Background environment 4) Time-tagged sensor measurements (of objects and NUDET events)	<p>Description: This function deals with those activities covering the operation of deployed S&D assets. It covers the tasking of search volumes and locations, the instructions to collect observables in a specific color band or frequency, the tasking of new sensor thresholds, the tasking of sensors to support specific events, i.e. NUDET observations, and the updating of on-board status and repair instructions.</p> <table border="1" data-bbox="481 844 747 1288"> <thead> <tr> <th data-bbox="481 844 514 1203">#</th><th data-bbox="514 844 747 1203">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="546 971 579 1288">F4221-1</td><td data-bbox="546 971 644 1288">Communications</td></tr> <tr> <td data-bbox="612 908 644 1288">F4221-2</td><td data-bbox="612 908 709 1288">Processing Resources</td></tr> <tr> <td data-bbox="677 971 709 1288">F4221-3</td><td data-bbox="677 971 775 1288">Sensor Controls</td></tr> <tr> <td data-bbox="709 1077 742 1288">F4221-4</td><td data-bbox="709 1077 807 1288">Maintenance</td></tr> </tbody> </table>	#	Requirement Description	F4221-1	Communications	F4221-2	Processing Resources	F4221-3	Sensor Controls	F4221-4	Maintenance	1) Sensor positions and viewing angles
#	Requirement Description											
F4221-1	Communications											
F4221-2	Processing Resources											
F4221-3	Sensor Controls											
F4221-4	Maintenance											

INPUT	F4222 - COLLECT AND FILTER OBSERVABLES	OUTPUT
<ul style="list-style-type: none"> 1) Collection taskings 2) Sensor position and viewing angles 3) Object/event observables 4) Background environment 	<p>Description: This function deals with the bulk filtering of a single sensor data cluster from a single target and a single scan to determine whether the observable falls into a specific group of categories such as stars, thrusting boosters, new or old space debris, clusters of objects, RVs or replicas, etc.</p>	<ul style="list-style-type: none"> 1) Filtered observables data

#	Requirement Description
F4222-1	Active Sensor
F4222-2	NUDET Sensor
F4222-3	Data Storage
F4222-4	Computational Resources
F4222-5	Algoithms

INPUT F4223 - PROVIDE TIME-TAGGED SENSOR MEASUREMENTS	OUTPUT 1) Time-tagged sensor measurements (objects and NUDET events)												
1) S&D data reporting taskings 2) Sensor position and viewing angles 3) Filtered observables data	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 15%;">#</th> <th style="text-align: left;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">F4222-1</td> <td>Data Storage</td> </tr> <tr> <td style="vertical-align: top;">F4222-2</td> <td>Computational Resources</td> </tr> <tr> <td style="vertical-align: top;">F4222-3</td> <td>Clock</td> </tr> <tr> <td style="vertical-align: top;">F4222-4</td> <td>Positioning Sensor</td> </tr> <tr> <td style="vertical-align: top;">F4222-5</td> <td>Algoirthms</td> </tr> </tbody> </table>	#	Requirement Description	F4222-1	Data Storage	F4222-2	Computational Resources	F4222-3	Clock	F4222-4	Positioning Sensor	F4222-5	Algoirthms
#	Requirement Description												
F4222-1	Data Storage												
F4222-2	Computational Resources												
F4222-3	Clock												
F4222-4	Positioning Sensor												
F4222-5	Algoirthms												

INPUT	F423 - INITIATE AND MAINTAIN TRACK FILES	OUTPUT
<p>1) S&D Resource And Track Reporting Taskings</p> <p>2) Time-tagged Sensor Measurements</p> <p>3) Object Type And Status Estimates</p> <p>4) System Status Data</p> <p>5) Situation Data</p>	<p>Description: This function encompasses the processes and means to correlate, filter, and possibly fuse sensor measurements in order to develop state vector estimates and improve their accuracy and confidence. The function includes association and correlation of the sensor measurements, initiation and updates of the state vector estimates, and fusing of independently developed state vector estimates. It may also require removing redundant and extraneous sensor measurement reports and providing a consistent and timely means by which to update the fields of the track file in order that other SDS functions can be supplied with the necessary data. Data fields of the track file may include time tags, state vector estimates, launch point or parent track estimates, radiometric signature data, and other information as required by elements and functions of the SDS.</p>	<p>1) Object/Cluster Track File</p>

Requirement Description

F423-1 Computational Resources

F423-2 Host Facilities And/Or Platforms

INPUT	F4231 - ASSOCIATE AND CORRELATE SENSOR MEASUREMENTS	OUTPUT					
<p>1) S&D Resource Taskings 2) System Status Data 3) Time-tagged Sensor Measurements 4) State Vector Estimates 5) Type And Status Estimates</p> <p>Description: This function encompasses the processes and means to perform data correlation of the time-tagged sensor measurements. This function includes frame-to-frame mono correlation, stereo correlation, resolving of unassociated sensor measurements, and filtering of extraneous observables, such as space debris. This requires associating single detection reports to an existing object/cluster track file and may require generating three-dimensional reports from the correlation of two or more measurements (e.g., for angle-only measurements). The function also accounts for the uncertainty in the origin of the measurements by forming gate regions around the extrapolated state estimate and assigning probabilities that a sensor measurement within the gate is correctly associated to the state estimate.</p> <table> <thead> <tr> <th data-bbox="780 994 812 1374">#</th> <th data-bbox="780 994 812 1290">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="837 994 869 1374">F4231-1</td> <td data-bbox="837 994 869 1290">Computational Resources</td> </tr> <tr> <td data-bbox="894 952 926 1374">F4231-2</td> <td data-bbox="894 952 926 1290">Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4231-1	Computational Resources	F4231-2	Host Facilities And/Or Platforms	<p>1) Correlated Measurements</p>
#	Requirement Description						
F4231-1	Computational Resources						
F4231-2	Host Facilities And/Or Platforms						

INPUT	F4232 - ESTIMATE CLUSTER/OBJECT STATE VECTOR	OUTPUT
1) S&D Resource And Track Reporting Taskings 2) Correlated Measurements 3) Type And Status Estimates	<p>Description: This function encompasses the processes and means to provide object/cluster state vector and confidence interval estimates in order to facilitate the execution of other SDS functions. This function includes determining the appropriate state estimation algorithm, determining the state estimation parameters such as the transition matrix and model noise, and computing the updated state vector and confidence interval estimates. Potential state estimation algorithms include the Kalman filter and the iterative least squares parameters estimation. A cluster, as opposed to an object, is a synthetic location which represents the centroid of a group of observables in three space, such as an RV and its associated decoys.</p>	1) Object/Cluster State Vector (And Confidence Interval) Estimates

INPUT	F4233 - FUSE STATE VECTOR ESTIMATES	OUTPUT				
<p>1) S&D Resource And Track Reporting Taskings 2) Object Track File 3) Object State Vector Estimates</p> <p>Description: This function encompasses the processes and means to merge state vector and confidence interval estimates when it is desired to improve the accuracy and confidence of the state vector estimates as compared to those developed by any single S&D element. This function includes determining the appropriate fusing algorithm, determining the fusing parameters, and computing the fused state vector and confidence interval estimates. Applicable fusion algorithms include filter algorithms which weight the state vector estimates according to their confidence levels and association algorithms which augment the correlation level of the state vector estimates.</p> <table border="1"> <thead> <tr> <th data-bbox="621 994 654 1396">#</th><th data-bbox="621 994 654 1290">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="687 994 719 1396">F4233-1</td><td data-bbox="687 994 719 1290">Computational Resources</td></tr> <tr> <td data-bbox="752 994 784 1396">F4233-2</td><td data-bbox="752 994 784 1290">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4233-1	Computational Resources	F4233-2	Host Facilities And/Or Platforms
#	Requirement Description					
F4233-1	Computational Resources					
F4233-2	Host Facilities And/Or Platforms					

INPUT	F4234 - APPEND RELEVANT DATA TO TRACK FILE	OUTPUT						
<ul style="list-style-type: none"> 1) S&D Track Reporting And Resources Taskings 2) State Vector Estimates Or Fused State Vector Estimates 3) Type And Status Estimates 4) Time-tagged Sensor Measurements 5) Situation Data 	<p>Description: This function encompasses the processes and means to initiate and maintain the entry of data into the cluster/object track file in order that the SDS functions can be supplied with the necessary and timely data. The track file can be defined as containing all the necessary cluster/object data that a set of SDS functions require to perform their objectives. By this definition the data fields of the track file can be permitted to vary among the SDS elements, as long as the data among the different track files is kept consistent. The objective of this function is to provide a consistent means with which to update the fields of the track file and to provide the SDS functions with the necessary cluster/object data required.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15px;">#</th> <th style="text-align: center;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F4234-1</td> <td>Computational Resources</td> </tr> <tr> <td style="text-align: center;">F4234-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4234-1	Computational Resources	F4234-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Updated Cluster/Object Track File
#	Requirement Description							
F4234-1	Computational Resources							
F4234-2	Host Facilities And/Or Platforms							

INPUT	F424 - CLASSIFY AND IDENTIFY OBJECTS/EVENTS	OUTPUT
<p>1) S&D Control And Tasking</p> <p>2) S&D Resource Tasking</p> <p>3) Discrimination, Kill</p> <p>Assessment, And NUDET</p> <p>Event Reporting Tasking</p> <p>Object Track File</p> <p>5) NUDET Sensor Measurements</p> <p>6) Situation Data (Threat Order Of Battle)</p> <p>Description: This function encompasses the processes and means to provide object type/status estimates and NUDET event data. This function includes providing object launch point and parent track estimates, comparing radiometric signature data, comparing object trajectory data, estimating object type and status, and estimating NUDET burst locations and yields. This function also provides a means by which the threat technical and threat order of battle data can be updated and/or revised as new information and observations of the threat become available.</p>	<p>1) Object Type And Status Estimates</p> <p>2) NUDET Event Data</p> <p># <u>Requirement Description</u></p> <p>F424-1 Computational Resources</p> <p>F424-2 Host Facilities And/Or Platforms</p>	

INPUT	F4241 - ESTIMATE LAUNCH POINT OR PARENT TRACK	OUTPUT				
<p>1) S&D Resource Taskings 2) Object Track File 3) Situation Data (Threat Order Of Battle)</p> <p>Description: This function encompasses the processes and means to provide launch point estimates for boost threat objects and parent track estimates for other inflight threat objects. This function includes determining the relevant estimation methods, computing the launch point and parent track estimates, and assessing the plausibility of launch point estimates. Launch point and parent track estimates are computed as soon as the relevant estimation methods have the required number of data points. The estimates are not continually updated since the estimates cannot be expected to improve as the threat objects travel further along their trajectory. The function also provides information required to update the threat order of battle data.</p> <table border="1" data-bbox="763 952 894 1459"> <thead> <tr> <th data-bbox="763 1015 784 1396">#</th><th data-bbox="763 994 784 1269">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="801 1015 822 1396">F4241-1</td><td data-bbox="801 994 822 1269">Computational Resources</td></tr> <tr> <td data-bbox="861 1015 882 1396">F4241-2</td><td data-bbox="861 994 882 1269">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4241-1	Computational Resources	F4241-2	Host Facilities And/Or Platforms
#	Requirement Description					
F4241-1	Computational Resources					
F4241-2	Host Facilities And/Or Platforms					

INPUT	F4242 - COMPARE RADIOMETRIC DATA TO COLLATERAL DATA	OUTPUT						
<p>1) S&D Control And Tasking</p> <p>2) Object Track File</p>	<p>Description: This function encompasses the processes and means to provide object type and status estimates based on comparisons between radiometric data from sensor measurements and collateral signature data files. This function involves determining the relevant collateral data signature files and correlating the radiometric data to those data files in order to identify object type/status estimates or candidates. It also involves converting the radiometric data into formats that are appropriate for data correlation. This may require filtering of the estimates in order to avoid the accumulation of a large set of radiometric data on each object. In some instances, signature data files may not exist for particular combinations of threat objects and radiometric data. In these cases, the function may need to provide information for updates to the signature data file.</p>	<p>1) Object Type/Status Candidates</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 10%;">#</th> <th style="text-align: left;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">F4242-1</td> <td>Computational Resources</td> </tr> <tr> <td style="vertical-align: top;">F4242-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4242-1	Computational Resources	F4242-2	Host Facilities And/Or Platforms
#	Requirement Description							
F4242-1	Computational Resources							
F4242-2	Host Facilities And/Or Platforms							

INPUT	<p>F4243 - COMPARE OBJECT TRAJECTORY TO COLLATERAL DATA</p> <p>1) S&D Control And Tasking 2) Object Track File 3) Launch Point Or Parent Track Estimate</p> <p>Description: This function encompasses the processes and means to provide object type and status estimates based on comparisons of object trajectory data and collateral trajectory data files. This function involves determining the relevant collateral trajectory data files and correlating the object data to the trajectory data files. The trajectory correlations include position and velocity discriminants, as well as acceleration discriminants, such as the ballistic coefficient and maneuvering forces. In some instances, collateral trajectory data may not exist for particular threat objects flying depressed, maneuvering, fast-burn or other unfamiliar trajectories. In these cases the function may need to provide information for updates to the collateral trajectory data file.</p>	<p>OUTPUT</p> <p>1) Object Type/Status Candidates</p>
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INPUT	F4244 - ESTIMATE OBJECT TYPE AND STATUS	OUTPUT						
<p>1) S&D Control And Tasking</p> <p>2) Discrimination And Kill</p> <p>Assessment Reporting</p> <p>Taskings</p> <p>3) S&D Resource Taskings</p> <p>4) Object Type And Status Candidates</p> <p>5) Launch Point Or Parent Track</p> <p>Estimates</p> <p>6) Situation Data (Threat O.B.)</p>	<p>Description: This function encompasses the processes and means to provide other SDS functions with a consistent cumulative set of object type/status estimates based on an accumulation of the launch point or parent track estimates and previously developed object type and status candidates. This function involves merging and fusing all relevant object type and status estimates, as well as estimating the time at which the object transitioned to its current status.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4244-1</td> <td>Computational Resources</td> </tr> <tr> <td>F4244-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4244-1	Computational Resources	F4244-2	Host Facilities And/Or Platforms	<p>1) Object Type And Status</p> <p>Estimates</p>
#	Requirement Description							
F4244-1	Computational Resources							
F4244-2	Host Facilities And/Or Platforms							

INPUT	F4245 - ESTIMATE NUDET PARAMETERS	OUTPUT						
<p>1) S&D Control And Tasking 2) NUDET Event Reporting Taskings 3) NUDET Sensor Measurements 4) Situation Data</p> <p>Description: This function encompasses the processes and means to provide nuclear detonation (NUDET) event data based on NUDET sensor measurements and in accordance with S&D resource and reporting taskings. This function involves correlating the sensor measurement reports to estimate the position and time of the NUDETs, as well as use of the radiometric data to estimate the yield of the NUDET bursts. It is also necessary to associate NUDET detections to potential threat objects in the object track file in order to provide birth-to-death tracking of threat objects, and to provide further information with which to estimate yield of burst.</p>	<p>1) NUDET Event Data</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4245-1</td> <td>Computational Resources</td> </tr> <tr> <td>F4245-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4245-1	Computational Resources	F4245-2	Host Facilities And/Or Platforms	
#	Requirement Description							
F4245-1	Computational Resources							
F4245-2	Host Facilities And/Or Platforms							

INPUT	F425 - EMPLOY EXPENDABLE SURVEILLANCE AND DISCRIMINATION ASSETS	OUTPUT												
1) Expendable S&D Taskings 2) Expendable S&D Asset Use Authorization 3) Object Track File 4) Situation Data	<p>Description: This function encompasses the processes and means to employ expendable S&D assets of the SDS in order to provide primary or augmentation means to obtain, filter, and/or process observables of interest into time-tagged sensor measurement reports. The function includes preparation of the S&D asset, delivery of the S&D asset to the desired location/volume for operation, and activation of the expendable S&D asset and its reporting. It does not include the actual collection, processing, and delivery of time-tagged sensor measurements, since these processes are part of function F422, Obtain and Process Observables.</p> <table border="1"> <thead> <tr> <th data-bbox="665 1030 690 1410">#</th><th data-bbox="665 1030 690 1347">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="719 1030 744 1410">F425-1</td><td data-bbox="719 1030 744 1347">Expendable S&D Assets</td></tr> <tr> <td data-bbox="773 1030 798 1410">F425-2</td><td data-bbox="773 1030 798 1347">Asset Delivery Subsystems</td></tr> <tr> <td data-bbox="827 1030 851 1410">F425-3</td><td data-bbox="827 1030 851 1347">Asset And Delivery Subsystem Storage And Support Facilities And/Or Platforms</td></tr> <tr> <td data-bbox="881 1030 905 1410">F425-4</td><td data-bbox="881 1030 905 1347">Asset And Delivery Subsystem Preparation Means</td></tr> <tr> <td data-bbox="935 1030 959 1410">F425-5</td><td data-bbox="935 1030 959 1347">Asset Activation Means</td></tr> </tbody> </table>	#	Requirement Description	F425-1	Expendable S&D Assets	F425-2	Asset Delivery Subsystems	F425-3	Asset And Delivery Subsystem Storage And Support Facilities And/Or Platforms	F425-4	Asset And Delivery Subsystem Preparation Means	F425-5	Asset Activation Means	1) S&D Expenditure Reports 2) Expendable S&D Asset Activations
#	Requirement Description													
F425-1	Expendable S&D Assets													
F425-2	Asset Delivery Subsystems													
F425-3	Asset And Delivery Subsystem Storage And Support Facilities And/Or Platforms													
F425-4	Asset And Delivery Subsystem Preparation Means													
F425-5	Asset Activation Means													

<p>INPUT</p> <ul style="list-style-type: none"> 1) Expendable S&D asset tasking 2) Track file 3) Situation data 	<p>F4251 - PREPARE S&D ASSETS FOR EMPLOYMENT</p> <p>Description: This function encompasses all the activities leading up to the launch of expendable S&D assets. This function includes the loading of instructions and taskings through the loading of expendable items, i.e. coolants, fuels, etc. This function also deals with the process of acquiring a launch vehicle, the mating of payloads, the prelaunch testing, and the orientation of the launch vehicle prior to launch.</p>	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) Prepared expendable S&D assets
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<u>#</u>	<u>Requirement Description</u>
F4251-1	Launch Facilities
F4251-2	S&D Assets
F4251-3	Expendables
F4251-4	Maintenance and Testing
F4251-5	Storage

INPUT	F4252 - DELIVER S&D ASSET TO LOCATION/ VOLUME FOR OPERATION	OUTPUT						
<p>1) Prepared expendable S&D asset</p> <p>2) Expendable S&D asset use authorization</p> <p>3) Situation data</p>	<p>Description: This function encompasses all the activities commencing with the launch of the S&D asset through the command guidance of the sensor to its assigned location ormspace surveillance volume</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F5252-1</td> <td>Tracking Facility</td> </tr> <tr> <td>F4252-1</td> <td>Communications</td> </tr> </tbody> </table>	#	Requirement Description	F5252-1	Tracking Facility	F4252-1	Communications	<p>1) S&D expenditure reports</p> <p>2) On station expendable S&D assets</p>
#	Requirement Description							
F5252-1	Tracking Facility							
F4252-1	Communications							

INPUT	F4253 - ACTIVATE S&D ASSET AND REPORTING	OUTPUT										
<p>1) On station expendable S&D assets 2) Situation data</p> <p>Description: This function encompasses all the activities commencing with the arrival of the S&D asset to its assigned location or space surveillance volume. This function deals with the activation of the sensor subsystems and the monitoring of data received from the activated sensor and future sensor taskings and instructions.</p>	<p>1) Expendable S&D asset activations</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4253-1</td><td>Tracking Facility</td></tr> <tr> <td>F4253-2</td><td>Communications</td></tr> <tr> <td>F4253-3</td><td>Sensor Analysis</td></tr> <tr> <td>F4253-4</td><td>Battle Management</td></tr> </tbody> </table>	#	Requirement Description	F4253-1	Tracking Facility	F4253-2	Communications	F4253-3	Sensor Analysis	F4253-4	Battle Management	
#	Requirement Description											
F4253-1	Tracking Facility											
F4253-2	Communications											
F4253-3	Sensor Analysis											
F4253-4	Battle Management											

INPUT	F43 - MONITOR AND ASSESS SITUATION	OUTPUT										
<ul style="list-style-type: none"> 1) Approved Decision Aids And Validated Procedures 2) Intelligence And Friendly Force Reports 3) System Status Data 4) Object/Event Data 5) Battle Data (S&D And Engagement Activity Reports) 	<p>Description: This high level function encompasses processes and means to provide situation data, warnings, and assessments in support of other SDS functions and external users, including release of object and event data to external users. The function includes assessing the threat force status, determining the existence of an attack, determining the assets and land areas at risk, evaluating the battle situation, and determining the status of defended assets which includes SDS assets.</p> <table border="0" style="width: 100%;"> <thead> <tr> <th data-bbox="491 1026 518 1406">#</th><th data-bbox="491 1406 518 1976">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="540 1026 567 1406">F43-1</td><td data-bbox="540 1406 567 1976">Threat Assessment Analysis</td></tr> <tr> <td data-bbox="589 1026 616 1406">F43-2</td><td data-bbox="589 1406 616 1976">Computational Resources</td></tr> <tr> <td data-bbox="638 1026 665 1406">F43-3</td><td data-bbox="638 1406 665 1976">Host Facilities And Platforms</td></tr> <tr> <td data-bbox="687 1026 714 1406">F43-4</td><td data-bbox="687 1406 714 1976">Communications And Interfaces To Other Functions Of The Employ SDS Function</td></tr> </tbody> </table>	#	Requirement Description	F43-1	Threat Assessment Analysis	F43-2	Computational Resources	F43-3	Host Facilities And Platforms	F43-4	Communications And Interfaces To Other Functions Of The Employ SDS Function	<ul style="list-style-type: none"> 1) Warning And Assessment Reports 2) Situation Data 3) Object/Event Data Released To External Users
#	Requirement Description											
F43-1	Threat Assessment Analysis											
F43-2	Computational Resources											
F43-3	Host Facilities And Platforms											
F43-4	Communications And Interfaces To Other Functions Of The Employ SDS Function											

INPUT	F431 - ASSESS THREAT FORCE STATUS	OUTPUT								
<p>1) Decision Aids And Procedures 2) Intelligence Reports 3) Object/Event Data</p>	<p>Description: This function encompasses the processes and means to accumulate, assess, and revise associated collateral databases of information on threat force status. The function includes assessing threat performance characteristics, updating threat order of battle data (O.B.), assessing indications and warning (I&W) information, and assessing overall risk measures.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F431-1</td><td>Threat Analysts</td></tr> <tr> <td>F431-2</td><td>Computational Resources</td></tr> <tr> <td>F431-3</td><td>Host Facilities And Platforms</td></tr> </tbody> </table>	#	Requirement Description	F431-1	Threat Analysts	F431-2	Computational Resources	F431-3	Host Facilities And Platforms	<p>1) Threat Evaluation 2) Threat Performance Data 3) Threat O.B. Data 4) Assessed Risk Of Attack</p>
#	Requirement Description									
F431-1	Threat Analysts									
F431-2	Computational Resources									
F431-3	Host Facilities And Platforms									

INPUT	F4311 - ASSESS THREAT PERFORMANCE CHARACTERISTICS	OUTPUT										
<p>1) Decision Aids And Procedures 2) Intelligence Reports 3) Object/Event Data</p>	<p>Description: This function encompasses the processes and means to revise/update collateral information and databases of threat performance characteristics. The function involves obtaining threat technical data from the intelligence community, obtaining threat data from SDS sensor observations, assessing threat performance characteristics bases on the data obtained, and revising/updating threat performance databases.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4311-1</td><td>Threat Scientific And Technical (S&T) Analysis</td></tr> <tr> <td>F4311-2</td><td>Analytical Tools And Simulation Capabilities</td></tr> <tr> <td>F4311-3</td><td>Real-time Computational Resources (Optional)</td></tr> <tr> <td>F4311-4</td><td>Host Facilities (And Optional Platforms)</td></tr> </tbody> </table>	#	Requirement Description	F4311-1	Threat Scientific And Technical (S&T) Analysis	F4311-2	Analytical Tools And Simulation Capabilities	F4311-3	Real-time Computational Resources (Optional)	F4311-4	Host Facilities (And Optional Platforms)	<p>1) Threat Performance Data (And Associated Portions Of Threat Evaluations)</p>
#	Requirement Description											
F4311-1	Threat Scientific And Technical (S&T) Analysis											
F4311-2	Analytical Tools And Simulation Capabilities											
F4311-3	Real-time Computational Resources (Optional)											
F4311-4	Host Facilities (And Optional Platforms)											

<p>INPUT</p> <ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) Intelligence Reports 3) Object/Event Data 	<p>OUTPUT</p> <p>1) Threat O.B. Data (And The Associated Portions Of Threat Evaluations)</p>								
<p>F4312 - UPDATE THREAT ORDER OF BATTLE</p> <p>Description: This function encompasses the processes and means to revise/update information and databases of the threat missile, space, and defense suppression system orders of battle, including quantities by type, positions, operational statuses, command and control relationships, and other relevant O.B. type data. The function involves obtaining threat O.B. data from the intelligence community, receiving launch point estimates and associations from other SDS functions, extracting threat space O.B. from the track file, optionally assessing damage expectancies of threat ground installations from friendly force retaliatory strikes, and revising/updating the threat O.B. information held by the SDS.</p>	<table border="1"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4312-1</td> <td>Threat O.B. Analysts</td> </tr> <tr> <td>F4312-2</td> <td>Real-time Computational Resources</td> </tr> <tr> <td>F4312-3</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4312-1	Threat O.B. Analysts	F4312-2	Real-time Computational Resources	F4312-3	Host Facilities And/Or Platforms
#	Requirement Description								
F4312-1	Threat O.B. Analysts								
F4312-2	Real-time Computational Resources								
F4312-3	Host Facilities And/Or Platforms								

INPUT	F4313 - ASSESS I&W INFORMATION	OUTPUT								
<ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) Threat O.B. Data 3) Intelligence Reports 4) Object/Event Data 	<p>Description: This function encompasses the processes and means to obtain and fuse indications and warning information to support assessment of risk measures. The function involves obtaining I&W information from the intelligence community, obtaining space object I&W information directly from the object/event data, and fusing the information to increase confidence levels as compared to the confidence inherent in any single indication.</p> <table border="1" data-bbox="507 861 687 1417"> <thead> <tr> <th data-bbox="507 1332 523 1374">#</th><th data-bbox="507 967 523 1262">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="540 1332 556 1374">F4313-1</td><td data-bbox="540 1121 556 1262">I&W Analysis</td></tr> <tr> <td data-bbox="572 1332 589 1374">F4313-2</td><td data-bbox="572 861 589 1262">I&W Cell And Associated Host Facilities</td></tr> <tr> <td data-bbox="605 1332 621 1374">F4313-3</td><td data-bbox="605 988 621 1262">Computational Resources</td></tr> </tbody> </table>	#	Requirement Description	F4313-1	I&W Analysis	F4313-2	I&W Cell And Associated Host Facilities	F4313-3	Computational Resources	<ul style="list-style-type: none"> 1) Fused I&W Data
#	Requirement Description									
F4313-1	I&W Analysis									
F4313-2	I&W Cell And Associated Host Facilities									
F4313-3	Computational Resources									

INPUT	F4314 - ASSESS RISK MEASURES	OUTPUT						
<p>1) Decision Aids And Procedures 2) Fused I&W Data 3) Threat O.B. Data 4) Threat Performance Data</p>	<p>Description: This function encompasses the processes and means to determine the likelihood of conflict or conflict escalation and to provide associated risk assessments to support decisions to elevate the SDS alert status and/or to provide another basis for corroboration of real-time indications of an attack. The function involves determining the likelihood of imminent attack, determining the likelihood of conflict escalation, estimating the consequences of an attack or escalation, and providing associated risk assessment reports.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4314-1</td><td>Situation Assessment Analysis</td></tr> <tr> <td>F4314-2</td><td>Host Facilities</td></tr> </tbody> </table>	#	Requirement Description	F4314-1	Situation Assessment Analysis	F4314-2	Host Facilities	<p>1) Assessed Risk Of Attack (Or Conflict Escalation)</p>
#	Requirement Description							
F4314-1	Situation Assessment Analysis							
F4314-2	Host Facilities							

<p>INPUT</p> <ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) System Status Data 3) Object/Event Data 4) Assessed Risk Of Attack 5) Reported Hostiles (Friendly) Force Reports 	<p>F432 - DETERMINE EXISTENCE OF ATTACK</p> <p>Description: This function encompasses the processes and means to identify and confirm the existence of a defense suppression and/or ballistic missile attack in order to support decisions to enable countermeasure and/or engagement actions and to provide warning of attack to external users. The function includes determining the existence of a covert suppression attack, determining the existence of an overt suppression attack, determining the existence of a ballistic missile attack, and confirming NUDET sightings.</p>	<p>OUTPUT</p> <p>1) Warning Of Attack (To Include Nature And Scope)</p>
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INPUT	F4321 - DETERMINE EXISTENCE OF COVERT SUPPRESSION ATTACK	Description: This function encompasses the processes and means to determine if there is or has been a covert attack on the SDS or portions thereof. The function involves monitoring system status data reporting, isolating suspicious system outages and malfunctions, formulating hypotheses as to causes, obtaining available corroborative information, assessing or testing the validity of the hypotheses, and rendering a determination as to the existence of a covert suppression attack.	1) Decision Aids And Procedures 2) System Status Data 3) Object/Event Data 4) Reported Hostilities	1) Identified Covert Suppression Attack(S)	OUTPUT

INPUT	F4322 - DETERMINE EXISTENCE OF OVERT SUPPRESSION ATTACK	OUTPUT										
<p>1) Decision Aids And Procedures 2) Object/Event Data 3) System Status Data 4) Assessed Risk Of Attack 5) Reported Hostilities 6) Identified Covert Suppression Attack 7) Identified Ballistic Missile Attack 8) Confirmation Of NUDET Sightings</p> <p>Description: This function encompasses the processes and means to identify and confirm the existence of an overt suppression attack against the SDS. The function involves monitoring initial indicators of an overt suppression attack, identifying indications of hostile suppression actions, weighing available supporting evidence when needed, rendering a determination of an overt suppression attack, and characterizing the nature/scope of the suppression attack.</p>		<p>1) Identified Overt Suppression Attack</p> <table> <thead> <tr> <th data-bbox="551 1248 584 1453">#</th> <th data-bbox="551 973 633 1453">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="584 1248 616 1453">F4322-1</td> <td data-bbox="584 973 633 1453">Attack Assessment Analysts</td> </tr> <tr> <td data-bbox="649 1248 682 1453">F4322-2</td> <td data-bbox="649 741 698 1453">Man-machine Interfaces For Displaying Information</td> </tr> <tr> <td data-bbox="714 1248 747 1453">F4322-3</td> <td data-bbox="714 994 763 1453">Computational Resources</td> </tr> <tr> <td data-bbox="780 1248 812 1453">F4322-4</td> <td data-bbox="780 1121 829 1453">Host Facilities</td> </tr> </tbody> </table>	#	Requirement Description	F4322-1	Attack Assessment Analysts	F4322-2	Man-machine Interfaces For Displaying Information	F4322-3	Computational Resources	F4322-4	Host Facilities
#	Requirement Description											
F4322-1	Attack Assessment Analysts											
F4322-2	Man-machine Interfaces For Displaying Information											
F4322-3	Computational Resources											
F4322-4	Host Facilities											

INPUT	F4323 - DETERMINE EXISTENCE OF BALLISTIC MISSILE ATTACK	OUTPUT
<ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) Object/Event Data 3) Assessed Risk Of Attack 4) Reported Hostilities 5) Identified Covert Suppression Attack 6) Identified Overt Suppression Attack 7) Confirmation Of NUDET Sightings 	<p>Description: This function encompasses the processes and means to identify the existence and characterize the size of a ballistic missile attack. The function involves monitoring object/event data reporting, identifying launch (or boost) of nuclear-capable foreign missile(s), weighing available supporting evidence, rendering a determination of a ballistic missile attack, and characterizing the size of the attack. The function is performed regardless of whether or not the United States is the target of the attack, i.e., the function is only concerned with determining the existence of a ballistic missile attack.</p>	<ul style="list-style-type: none"> 1) Identified Ballistic Missile Attack

#	Requirement Description
F4323-1	Attack Assessment Analysis
F4323-2	Man-machine Interface For Information Display
F4323-3	Computational Resources
F4323-4	Host Facilities

INPUT	F4324 - CONFIRM NUDET SIGHTINGS	OUTPUT								
<p>1) Decision Aids And Procedures 2) Object/Event Data 3) Reported Hostilities 4) Identified Overt Suppression Attack 5) Identified Ballistic Missile Attack</p>	<p>Description: This function encompasses the processes and means to confirm and characterize the numbers and timing of nuclear detonations in order to indicate or corroborate the existence of a defense suppression and/or ballistic missile attack. The function involves monitoring NUDET event data reporting in the SDS system, corroborating system NUDET reports when needed, rendering a confirmation of NUDET event(s), and characterizing the numbers and timing of NUDETs.</p> <table border="1" data-bbox="522 971 734 1436"> <thead> <tr> <th data-bbox="522 971 554 1267">#</th><th data-bbox="522 971 554 1436">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="587 971 620 1436">F4324-1</td><td data-bbox="587 971 620 1436">Situation Analysts</td></tr> <tr> <td data-bbox="652 971 685 1436">F4324-2</td><td data-bbox="652 971 685 1436">Computational Resources</td></tr> <tr> <td data-bbox="718 971 750 1436">F4324-3</td><td data-bbox="718 971 750 1436">Host Facilities</td></tr> </tbody> </table>	#	Requirement Description	F4324-1	Situation Analysts	F4324-2	Computational Resources	F4324-3	Host Facilities	<p>1) Confirmation Of NUDET Sightings</p>
#	Requirement Description									
F4324-1	Situation Analysts									
F4324-2	Computational Resources									
F4324-3	Host Facilities									

INPUT	F433 - DETERMINE ASSETS/AREAS AT RISK	OUTPUT						
<ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) Defended Asset Status 3) Threat O.B. And Performance Data 4) Warning Of Attack 5) Object/Event Data (Track File) 	<p>Description: This function encompasses the processes and means to identify by threat object the asset(s) or area(s) it is placing at risk. Assets include SDS platforms and installations, as well as other defended assets in the United States and Allied countries, and in space. The function includes projecting friendly asset positions, projecting threat object envelopes, computing closest approach distances, and comparing those distances to vulnerable radii of the assets. The function is performed before launch or commit of the threat objects to identify the full range of assets/areas which it could attack (i.e., SDS space platforms or other friendly satellites in the case of ASAT threat systems, and land areas in the case of ballistic missiles), as well as in each phase of the object's flight after launch, in order to support assignment of values to objects for engagement (or weapons withhold) and to support attack assessment. Since the envelope of the threat object will narrow after commit, and the SDS system's accuracy in predicting the trajectory of the threat object will improve with phase of flight and number of position measurements obtained, the function should result in successively better resolution in the asset/area at risk prediction.</p>	<p>1) Threat Versus Assets/Areas</p> <table border="1" data-bbox="931 988 1067 1459"> <thead> <tr> <th data-bbox="931 1396 954 1425">#</th><th data-bbox="931 1022 954 1322">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="975 1368 998 1425">F433-1</td><td data-bbox="975 1036 998 1322">Computational Resources</td></tr> <tr> <td data-bbox="1042 1368 1065 1425">F433-2</td><td data-bbox="1042 988 1065 1322">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F433-1	Computational Resources	F433-2	Host Facilities And/Or Platforms
#	Requirement Description							
F433-1	Computational Resources							
F433-2	Host Facilities And/Or Platforms							

INPUT	F4331 - PROJECT FRIENDLY ASSET POSITIONS	OUTPUT						
1) Decision Aids And Procedures 2) Asset Positions/Motions	<p>Description: This function encompasses the processes and means to project the positions of friendly assets into the future in order to support determination of potential closest approach distances to threat objects. The function involves identifying state estimates for friendly assets, determining the state extrapolation method, and actual extrapolating of the friendly asset locations over time out to some appropriate planning window. Note that even "fixed" assets will have motion in an inertial reference frame, and therefore must have their positions projected in that reference frame. In this context, the word "assets" includes land areas.</p> <table> <thead> <tr> <th data-bbox="572 1009 600 1389">#</th><th data-bbox="572 1009 600 1389">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="638 1009 665 1431">F4331-1</td><td data-bbox="638 1009 665 1431">Computational Resources</td></tr> <tr> <td data-bbox="703 903 731 1431">F4331-2</td><td data-bbox="703 903 731 1431">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4331-1	Computational Resources	F4331-2	Host Facilities And/Or Platforms	1) Projected Friendly Asset Positions
#	Requirement Description							
F4331-1	Computational Resources							
F4331-2	Host Facilities And/Or Platforms							

INPUT	F4332 - PROJECT THREAT OBJECT ENVELOPES	OUTPUT						
<ul style="list-style-type: none"> 1) Decision aids and procedures 2) Threat O.B. data 3) Warning of attack 4) Object/event data (track file) 5) Threat performance data 	<p>Description: This function encompasses the processes and means to estimate/project threat object envelopes in order to support determination of closest approach distances to assets/areas. The function involves identifying the threat object state estimate (from the threat O.B. database or from the track file), determining the appropriate state extrapolation method, and extrapolating of the threat object trajectory/envelope. For uncommitted threat objects, this will be the threat system's precommit envelope associated with its launch site or platform location (though this could be refined if there were reliable a priori information about the specific targets against which it is assigned). For inflight threat objects, this will be the expected trajectory and some confidence bound around that expected trajectory, i.e., the threat tube.</p> <table border="1" data-bbox="714 988 850 1474"> <thead> <tr> <th data-bbox="714 988 747 1431">#</th><th data-bbox="714 988 747 1305">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="763 988 796 1431">F4332-1</td><td data-bbox="763 988 796 1305">Computational resources</td></tr> <tr> <td data-bbox="829 988 861 1431">F4332-2</td><td data-bbox="829 988 861 1305">Host facilities and/or platforms</td></tr> </tbody> </table>	#	Requirement Description	F4332-1	Computational resources	F4332-2	Host facilities and/or platforms	<ul style="list-style-type: none"> 1) Areas at risk 2) Threat trajectories/envelopes
#	Requirement Description							
F4332-1	Computational resources							
F4332-2	Host facilities and/or platforms							

INPUT	F4333 - COMPUTE CLOSEST APPROACH DISTANCES	OUTPUT						
<p>1) Decision Aids And Procedures</p> <p>2) Projected Friendly Asset Positions</p> <p>3) Threat Trajectories/Envelopes</p>	<p>Description: This function encompasses the processes and means to determine closest approach distances between friendly assets and threat objects based on the projected positions and trajectories/envelopes of each, respectively. The function involves comparing threat trajectories/envelopes to friendly asset projected positions, computing distances over time, and determining the minimum distances between a threat object's expected trajectory and all the assets within (or which enter) its envelope.</p> <table border="1" data-bbox="600 946 736 1431"> <thead> <tr> <th data-bbox="600 973 633 1383">#</th><th data-bbox="633 973 665 1383">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="670 1311 703 1431">F4333-1</td><td data-bbox="670 994 703 1284">Computational Resources</td></tr> <tr> <td data-bbox="719 1311 752 1431">F4333-2</td><td data-bbox="719 946 752 1347">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4333-1	Computational Resources	F4333-2	Host Facilities And/Or Platforms	<p>1) Closest Approach Distances</p>
#	Requirement Description							
F4333-1	Computational Resources							
F4333-2	Host Facilities And/Or Platforms							

INPUT	F4334 - COMPARE DISTANCES TO VULNERABLE RADII	<p>OUTPUT</p> <p>1) Decision Aids And Procedures 2) Asset Vulnerability Data 3) Threat Performance Data 4) Closest Approach Distances</p> <p>Description: This function encompasses the processes and means to determine the specific asset(s) at risk from a threat object based on closest approach distance(s) and radii of vulnerability of the asset(s) to the threat object. The function involves assessing friendly asset vulnerable radii (e.g., sure-safe and sure-kill radii) to the estimated destructive power/performance of the threat object, comparing the vulnerable radii to the closest approach distance, determining the expected degree of risk to the friendly asset, and disseminating friendly asset risk reports.</p> <table border="1"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4334-1</td><td>Computational Resources</td></tr> <tr> <td>F4334-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table> <p>1) Assets At Risk (Including Degree Of Risk And Threat Object Or Objects Causing The Risk)</p>	#	Requirement Description	F4334-1	Computational Resources	F4334-2	Host Facilities And/Or Platforms
#	Requirement Description							
F4334-1	Computational Resources							
F4334-2	Host Facilities And/Or Platforms							

INPUT	F434 - EVALUATE BATTLE SITUATION	Description: This function encompasses the processes and means to perform real-time monitoring, assessment, and evaluation of the battle situation to support both decisionmaking and automated battle management. The function includes inferring the attack objectives, monitoring battle activities, performing target kill assessment, estimating aggregate system performance, characterizing the remaining threat, and characterizing the current system capability. As a part of these activities, the function provides information to enhance attack assessment reporting and serves as the control for release of object/event data to external users.	OUTPUT
1) Decision Aids And Procedures 2) Threats Versus Assets/Areas 3) Battle Data (S&D And Engagement Activity Reports) 4) Object/Event Data (Track File) 5) Threat O.B. And Performance 6) System Status Data		1) Inferred Attack Objectives (Becomes A Part Of The Attack Assessment) 2) Object/Event Data (To Track File And To External Users) 3) System And Threat Effectiveness And Capability Assessments (I.E., Aggregate System Performance, Remaining Threat Capability, And Current System Capability)	

INPUT	F4341 - INFER ATTACK OBJECTIVES	OUTPUT
<p>1) Decision Aids And Procedures 2) Threats Versus Assets/Areas 3) Remaining Threat Capability</p> <p>Description: This function encompasses the processes and means to arrive at a best estimate of the objectives the attacker is attempting to achieve in the unfolding attack, in order to support HA decision making relative to employment of other forces and to provide a basis (with other factors) for revisions of defense preferences. The function involves summarizing the nature and scope of the attack, including threat numbers and timing, as well as assets and functions under attack; summarizing the threat force not yet committed, including defense suppression assets, ballistic missiles, and associated O.B.; assessing possible intentions (unauthorized launch, suppression-only attack, third party attack only, counterforce versus countervalue, etc.), and rendering a best estimate as to the attack objectives.</p>	<p>1) Attack Objectives</p> <p># Requirement Description</p> <p>F4341-1 Situation Assessment Analysis</p> <p>F4341-2 Man-machine Interface For Information Display</p> <p>F4341-3 Computational Resources</p> <p>F4341-4 Host Facilities</p>	

INPUT	F4342 - MONITOR BATTLE ACTIVITIES	OUTPUT
<p>1) Decision Aids And Procedures 2) System Status Data 3) Battle Data (S&D And Engagement Activities)</p> <p>Description: This function encompasses the processes and means to monitor and summarize the real-time battle activities in order to provide requisite data to support kill assessment, estimation of aggregate system performance, and characterization of the current system capability. The function involves monitoring system status reporting, monitoring S&D activities, monitoring engagement activities, and summarizing the system asset activities as needed to support other SDS functions.</p>	<p>1) System Asset Activity Information And Summaries</p>	

#	Requirement Description
F4342-1	Computational Resources
F4342-2	Situation Analysis And Displays (Optional)
F4342-3	Host Facilities And/Or Platforms

INPUT	F4343 - PERFORM TARGET KILL ASSESSMENT	OUTPUT
1) Decision Aids And Procedures 2) System Asset Activity 3) Object/Event Data (Track File)	<p>Description: This function encompasses the processes and means to develop best estimates of target kill probabilities based on both system asset activity data and object/event data. For each credible threat object, the function involves identifying the S&D threat status estimate, determining if the system responded to the threat, comparing the S&D estimate of the system response information, and fusing the a priori and S&D kill probability estimates to form a best estimate. (Note that it is possible that the S&D estimate of object status might indicate that the threat has been destroyed, but the system has not engaged it, in which case the threat may have failed on its own or the S&D estimate may be false.) Since the assessments performed by this function validate and improve upon the object/event data reporting of the S&D elements, the function serves as a control for release of object/event data to external users and for update of the object status data contained in the track file.</p>	1) Assessed Killed And Live Threat Objects

#	Requirement Description
F4343-1	Computational Resources
F4343-2	Host Facilities And/Or Platforms

INPUT	F4344 - ESTIMATE AGGREGATE PERFORMANCE	OUTPUT								
<p>1) Decision Aids And Procedures 2) System Asset Activity 3) Assessed Killed And Live 4) Threat Objects 5) Object/Event Data (Track File) System Status Data</p>	<p>Description: This function encompasses the processes and means to estimate aggregate performance measures relevant for decision making and the higher level battle management functions. The function involves determining intercept rates by weapon and target types, leakage rates by engagement phase, unexploited engagement opportunity rates, and attrition rates by system asset type, as needed by the served decision making and battle management functions.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4344-1</td> <td>Computational Resources</td> </tr> <tr> <td>F4344-2</td> <td>Situation Analysts And Displays (Optional)</td> </tr> <tr> <td>F4344-3</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4344-1	Computational Resources	F4344-2	Situation Analysts And Displays (Optional)	F4344-3	Host Facilities And/Or Platforms	<p>1) Aggregate System Performance Estimates</p>
#	Requirement Description									
F4344-1	Computational Resources									
F4344-2	Situation Analysts And Displays (Optional)									
F4344-3	Host Facilities And/Or Platforms									

INPUT	F4345 - CHARACTERIZE REMAINING THREAT	OUTPUT								
<p>1) Decision Aids And Procedures 2) Assessed Killed And Live Threat Objects 3) Threats Versus Assets/Areas 4) Threat O.B. And Performance</p> <p>Description: This function encompasses the processes and means to characterize the remaining threat to support the process of inferring the attack objectives, as well as high level battle management functions, such as selection/reselection of engagement strategy and tactics options. The function involves summarizing in flight threat objects, assets still at immediate risk, the uncommitted threat arsenal, and the damage capability of the uncommitted threat, all in a forms appropriate to the using SDS functions.</p>	<p>1) Remaining Threat Capability</p> <table border="1"> <thead> <tr> <th data-bbox="567 1009 589 1410">#</th><th data-bbox="567 1009 621 1410">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="605 1009 626 1410">F4345-1</td><td data-bbox="605 1009 659 1410">Computational Resources</td></tr> <tr> <td data-bbox="675 1009 696 1410">F4345-2</td><td data-bbox="675 1009 729 1410">Situation Analysts And Displays (Optional)</td></tr> <tr> <td data-bbox="745 1009 767 1410">F4345-3</td><td data-bbox="745 1009 799 1410">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4345-1	Computational Resources	F4345-2	Situation Analysts And Displays (Optional)	F4345-3	Host Facilities And/Or Platforms	
#	Requirement Description									
F4345-1	Computational Resources									
F4345-2	Situation Analysts And Displays (Optional)									
F4345-3	Host Facilities And/Or Platforms									

INPUT	F4346 - CHARACTERIZE CURRENT SYSTEM CAPABILITY	OUTPUT								
<p>1) Decision Aids And Procedures 2) System Status Data 3) System Asset Activities 4) Aggregate System Performance 5) Inferred Attack Objectives</p>	<p>Description: This function encompasses the processes and means to characterize the current capability of the SDS to achieve its mission requirements and to deny the attack objectives, in order to support decision making and higher level battle management functions. The function involves determining the status and availability of system resources, determining the battle losses and expenditures, predicting future system performance, and estimating the capability to deny the inferred attack objectives.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4346-1</td><td>Situation Analysts And Displays (Optional)</td></tr> <tr> <td>F4346-2</td><td>Computational Resources</td></tr> <tr> <td>F4346-3</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4346-1	Situation Analysts And Displays (Optional)	F4346-2	Computational Resources	F4346-3	Host Facilities And/Or Platforms	<p>1) Current System Capability</p>
#	Requirement Description									
F4346-1	Situation Analysts And Displays (Optional)									
F4346-2	Computational Resources									
F4346-3	Host Facilities And/Or Platforms									

INPUT	F435 - DETERMINE DEFENDED ASSET STATUS	OUTPUT						
<ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) Friendly Force Reports 3) System Status Data 4) Battle Data (S&D And Engagement Activity Reports) 5) Threats Versus Assets/Areas 6) Object/Event Data (Track File And NUDETs) 	<p>Description: This function encompasses the processes and means to determine the current activities, vulnerabilities, and survival of defended assets, including SDS assets, in order to support implementation of various forms of engagement strategies and tactics, particularly preferential defense and self defense strategies/tactics. The function includes monitoring defended asset status data reporting, computing or inferring damage expectancies, and updating the defended asset data.</p> <table border="1" data-bbox="540 1015 670 1459"> <thead> <tr> <th data-bbox="540 1015 572 1417">#</th><th data-bbox="540 1015 572 1332">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="589 1015 621 1417">F435-1</td><td data-bbox="589 1015 621 1332">Computational Resources</td></tr> <tr> <td data-bbox="638 1015 670 1417">F435-2</td><td data-bbox="638 1015 670 1332">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F435-1	Computational Resources	F435-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Defended Asset Status
#	Requirement Description							
F435-1	Computational Resources							
F435-2	Host Facilities And/Or Platforms							

INPUT	F4351 - MONITOR DEFENDED ASSET STATUS	OUTPUT						
<ul style="list-style-type: none"> 1) Decision aids and procedures 2) Friendly force reports 3) System status data 4) Battle data (S&D and engagement activity reports) 5) Previous update of defended asset status 	<p>Description: This function encompasses the processes and means to characterize the current criticality and vulnerability of defended asset, including SDS assets, on the basis of reported status and plans. The function involves monitoring system asset status and activities, monitoring other defended asset status and plans reporting, and characterizing the current criticality and vulnerability of the defended assets based on that data.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 10%;"><u>#</u></th> <th style="text-align: center; width: 90%;"><u>Requirement Description</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F4351-1</td> <td>Computational resources</td> </tr> <tr> <td style="text-align: center;">F4351-2</td> <td>Host facilities and/or platforms</td> </tr> </tbody> </table>	<u>#</u>	<u>Requirement Description</u>	F4351-1	Computational resources	F4351-2	Host facilities and/or platforms	<ul style="list-style-type: none"> 1) Defended Asset Activity 2) Defended Asset Vulnerability
<u>#</u>	<u>Requirement Description</u>							
F4351-1	Computational resources							
F4351-2	Host facilities and/or platforms							

INPUT	F4352 - COMPUTE AND INFER DAMAGE EXPECTANCIES	OUTPUT						
	<p>1) Decision Aids And Procedures 2) Defended Asset Vulnerability Threats Versus Assets/Areas 3) Object/Event Data (Track File And NUDETs) 4) Friendly Force Reports 5) System Status Data</p> <p>Description: This function encompasses the processes and means to determine or estimate the survival of defended assets based on their current vulnerabilities. NUDET event data, and continuation or cessation of reporting from assets. The function involves computing damage expectancies from NUDET event data, inferring damage from cessation of reporting, and aggregating the computed and inferred damage estimates to provide best estimates.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4352-1</td><td>Computational Resources</td></tr> <tr> <td>F4352-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4352-1	Computational Resources	F4352-2	Host Facilities And/Or Platforms	<p>1) Defended Asset Damage Expectancies</p>
#	Requirement Description							
F4352-1	Computational Resources							
F4352-2	Host Facilities And/Or Platforms							

INPUT	F4353 - UPDATE DEFENDED ASSET DATA	Description: This function encompasses the processes and means to update the real-time databases of defended asset status. The function involves updating asset criticality indices, asset vulnerability parameters, and asset damage expectancy.	1) Current Defended Asset Data (In A Form Needed By Supported Functions)						
OUTPUT									
<ul style="list-style-type: none"> 1) Decision Aids And Procedures 2) Defended Asset Activity 3) Defended Asset Vulnerability 4) Defended Asset Damage Expectancy 		<table border="1"> <thead> <tr> <th data-bbox="437 1368 470 1389">#</th><th data-bbox="437 952 470 1269">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="510 1315 543 1421">F4353-1</td><td data-bbox="510 973 543 1248">Computational Resources</td></tr> <tr> <td data-bbox="559 1315 592 1421">F4353-2</td><td data-bbox="559 910 592 1248">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4353-1	Computational Resources	F4353-2	Host Facilities And/Or Platforms	
#	Requirement Description								
F4353-1	Computational Resources								
F4353-2	Host Facilities And/Or Platforms								

INPUT	F44 - SELECT DEFENSIVE RESPONSE	OUTPUT
<ul style="list-style-type: none"> 1) Current ROEs 2) Current Defense Preferences 3) Strategy Selection Overrides 4) Situation Data 5) System Status Data 6) Object/Event Data 	<p>Description: This high level function encompasses the processes and means for selecting the desired response of the SDS to the existence of threat objects and events relevant to the system. The function includes identifying ROE-imposed constraints on SDS actions, selecting a preferred engagement strategy, selecting preferred engagement tactics, and selecting preferred countermeasure tactics.</p>	<ul style="list-style-type: none"> 1) Engagement Strategy Nominations 2) Response Parameters

INPUT	F441 - IDENTIFY ROE-IMPOSED CONSTRAINTS	OUTPUT
		1) ROE Constraints
<p>1) Current ROEs 2) Situation Data 3) Object/Event Data 4) System Status Data</p> <p>Description: This function encompasses the processes and means to determine in real time the constraints on allowable SDS actions which are imposed due the current set of ROEs and the situation dynamics. The function includes determining satisfaction of ROE conditions (and hence the specific ROE constructs invoked) based on situation and other data, determining which if any of the ROEs are superseded by other invoked ROEs, and determining the union of constraints from the remaining invoked ROEs.</p>	<p># Requirement Description</p> <p>F441-1 Computational Resources</p>	

INPUT	OUTPUT				
F4411 - DETERMINE SATISFACTION OF ROE CONDITIONS					
<p>1) Current ROEs 2) Situation Data 3) Object/Event Data 4) System Status Data</p>	<p>1) ROEs With Satisfied Conditions</p> <p>Description: This function encompasses the processes and means to identify in real time the specific ROEs which are invoked by satisfaction of the conditional part of the ROE construct. The function involves identifying the data needed to determine ROE conditions, extracting the data from system reporting and databases, converting the data as needed for ROE evaluation, determining which ROEs are invoked, and identifying those ROEs.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4411-1</td><td>Computational Resources</td></tr> </tbody> </table>	#	Requirement Description	F4411-1	Computational Resources
#	Requirement Description				
F4411-1	Computational Resources				

INPUT	F4412 - DETERMINE SUPERSEDED ROEs	OUTPUT				
<p>1) Current ROEs 2) ROEs With Satisfied Conditions</p>	<p>Description: This function encompasses the processes and means to identify and disinvoke ROEs which are superseded by other invoked ROEs. The function involves identifying invoked ROEs which override other ROEs, identifying which if any of the invoked ROEs are thereby overridden, and disinvoing those</p> <table border="0" data-bbox="486 973 584 1431"> <thead> <tr> <th data-bbox="486 973 518 1374">#</th> <th data-bbox="518 973 584 1374">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="551 1311 584 1431">F4412-1</td> <td data-bbox="551 973 584 1269">Computational Resources</td> </tr> </tbody> </table>	#	Requirement Description	F4412-1	Computational Resources	<p>1) Remaining Invoked ROEs</p>
#	Requirement Description					
F4412-1	Computational Resources					

INPUT	F4413 - DETERMINE UNION OF ROE CONSTRAINTS	OUTPUT				
		<p>1) ROE Constraints</p> <p>Description: This function encompasses the processes and means to identify and disseminate as required the constraints associated with the remaining invoked ROEs. The function involves extracting the constraints from the remaining invoked ROEs, determining the disallowed (or allowed) engagement and countermeasure actions associated with those ROE constraints, and disseminating the ROE-imposed constraints to other SDS functions.</p> <table border="1" data-bbox="605 1036 703 1480"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4413-1</td><td>Computational Resources</td></tr> </tbody> </table>	#	Requirement Description	F4413-1	Computational Resources
#	Requirement Description					
F4413-1	Computational Resources					

INPUT	F442 - SELECT STRATEGY OPTION	OUTPUT						
<ul style="list-style-type: none"> 1) ROE Constraints 2) Defense Preferences 3) Strategy Overrides 4) Situation Data 5) Object/Event Data 	<p>Description: This function encompasses the processes and means to select, nominate, and specify a preferred, allowable engagement strategy in accordance with defense preferences and situation and other data, as well as to implement a strategy override from the positive control function of the SDS. The select strategy function includes determining allowable strategy options in relation to ROE constraints, computing strategy selection metrics, nominating a preferred strategy option, implementing strategy selection overrides as required, and specifying the governing strategy.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: right; width: 15px;">#</th> <th style="text-align: left;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: right;">F442-1</td> <td style="text-align: left;">Strategy Selection Resources (Computational Resources And/Or Personnel)</td> </tr> <tr> <td style="text-align: right;">F442-2</td> <td style="text-align: left;">Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F442-1	Strategy Selection Resources (Computational Resources And/Or Personnel)	F442-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Engagement Strategy Nomination 2) Strategy Selection (And Specification)
#	Requirement Description							
F442-1	Strategy Selection Resources (Computational Resources And/Or Personnel)							
F442-2	Host Facilities And/Or Platforms							

INPUT	F4421 - DETERMINE ALLOWABLE STRATEGY OPTIONS <p>1) ROE Constraints</p>	<p>Description: This function encompasses the processes and means to identify which of the potential strategy options are allowable under the current ROE-imposed constraints. The function involves identifying actions involved in each strategy option, comparing those actions against ROE-imposed constraints to determine precluded strategy options, and identifying remaining allowed strategy options.</p> <table border="1" data-bbox="567 988 731 1474"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4421-1</td><td>Strategy Selection Resources</td></tr> <tr> <td>F4421-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4421-1	Strategy Selection Resources	F4421-2	Host Facilities And/Or Platforms	OUTPUT <p>1) Set Of Allowed Strategy Options</p>
#	Requirement Description								
F4421-1	Strategy Selection Resources								
F4421-2	Host Facilities And/Or Platforms								

INPUT	F4422 - COMPUTE STRATEGY SELECTION METRICS	OUTPUT						
<ul style="list-style-type: none"> 1) Defense Preferences 2) Set Of Allowed Strategy Options 3) Situation Data 4) Object/Event Data 5) Previous Strategy Selection (If Applicable) 	<p>Description: This function encompasses the processes and means to assess goodness metrics for allowed strategy options in relation to defense preferences, situation and other data, and the previous strategy selection (if applicable). The function involves determining the particular method(s) to assess goodness metrics, determining data needed to assess the metrics, extracting required data from system reporting and databases, converting the data as needed to calculate goodness metrics, and actual calculating of the metrics for the set of allowed strategy options.</p> <table border="0" data-bbox="556 952 703 1431"> <thead> <tr> <th data-bbox="556 1353 572 1374">#</th> <th data-bbox="556 973 572 1269">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="621 1311 638 1431">F4422-1</td> <td data-bbox="621 952 638 1269">Strategy Selection Resources</td> </tr> <tr> <td data-bbox="687 1311 703 1431">F4422-2</td> <td data-bbox="687 952 703 1269">Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4422-1	Strategy Selection Resources	F4422-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Assessed Goodness Metrics For Allowed Strategy Options
#	Requirement Description							
F4422-1	Strategy Selection Resources							
F4422-2	Host Facilities And/Or Platforms							

INPUT	OUTPUT						
<p>F4423 - NOMINATE PREFERRED STRATEGY OPTION</p> <p>1) Set Of Allowed Strategy Options 2) Assessed Goodness Metrics</p>	<p>Engagement Strategy Nomination</p> <p>Description: This function encompasses the processes and means to identify and nominate a preferred, allowable strategy option based on the assessed goodness metrics. The function involves rank ordering of allowed strategy options in accordance with each of the (possibly many) goodness metrics, identifying and eliminating dominated strategy options (i.e., those which rank lower than at least one other strategy option with respect to all the metrics), weighting the relative importance of the selection metrics, and identifying and nominating the strategy option which is preferred relative to the complete set of weighted metrics.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4423-1</td> <td>Strategy Selection Resources</td> </tr> <tr> <td>F4423-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4423-1	Strategy Selection Resources	F4423-2	Host Facilities And/Or Platforms
#	Requirement Description						
F4423-1	Strategy Selection Resources						
F4423-2	Host Facilities And/Or Platforms						

INPUT	F4424- IMPLEMENT STRATEGY SELECTION OVERRIDE (AS REQUIRED)	OUTPUT						
<p>1) Strategy Override Message</p> <p>2) Engagement Strategy Nomination</p>	<p>Description: This function encompasses the processes and means to implement strategy selection overrides whenever they are commanded from the positive control function of the SDS. The function involves monitoring and receiving a strategy selection override message from the positive control cell, authenticating the override command, and providing the associated alternative strategy for specification in lieu of the nominated strategy.</p> <table> <thead> <tr> <th>#</th><th><u>Requirement Description</u></th></tr> </thead> <tbody> <tr> <td>F4424-1</td><td>Strategy Selection Resources</td></tr> <tr> <td>F4424-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	<u>Requirement Description</u>	F4424-1	Strategy Selection Resources	F4424-2	Host Facilities And/Or Platforms	<p>1) Alternative Strategy For Specification</p>
#	<u>Requirement Description</u>							
F4424-1	Strategy Selection Resources							
F4424-2	Host Facilities And/Or Platforms							

INPUT	F4425 - SPECIFY GOVERNING STRATEGY	OUTPUT						
<p>1) Nominated Or Alternative (Override) Strategy Selection</p> <p>2) Defense Preferences</p> <p>3) Situation Data</p> <p>4) Object/Event Data</p> <p>Description: This function encompasses the processes and means to specify the governing strategy (i.e., the nominated strategy or the alternative strategy associated with a strategy selection override, as applicable) in terms of response parameters needed as inputs by other SDS functions. The function involves specifying the strategy option identification, the associated target/threat value computation method, the weapons withhold requirements, and other strategy specific constraints as applicable.</p>	<p>1) Specified Engagement Strategy Selection</p> <table> <thead> <tr> <th data-bbox="594 1022 626 1444">#</th><th data-bbox="594 1022 740 1444">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="659 1022 691 1444">F4425-1</td><td data-bbox="659 1022 740 1444">Strategy Selection Resources</td></tr> <tr> <td data-bbox="724 1022 757 1444">F4425-2</td><td data-bbox="724 1022 740 1444">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4425-1	Strategy Selection Resources	F4425-2	Host Facilities And/Or Platforms	
#	Requirement Description							
F4425-1	Strategy Selection Resources							
F4425-2	Host Facilities And/Or Platforms							

INPUT	F443 - SELECT ENGAGEMENT TACTICS	OUTPUT						
1) ROE Constraints 2) Engagement Strategy Selection 3) Defense Preferences 4) System Status Data 5) Situation Data 6) Object/Event Data	<p>Description: This function encompasses the processes and means to select and specify preferred, allowed engagement tactics in relation to ROE constraints, the engagement strategy selection, defense preferences, and situation and other data. The function includes determining allowed engagement actions, determining compatible engagement action sets, computing engagement tactics selection metrics, and selecting and specifying governing engagement tactics.</p> <table border="1" data-bbox="535 952 670 1457"> <thead> <tr> <th data-bbox="535 973 567 1393">#</th><th data-bbox="535 973 567 1288">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="605 973 638 1393">F443-1</td><td data-bbox="605 973 638 1288">Computational Resources</td></tr> <tr> <td data-bbox="659 973 691 1393">F443-2</td><td data-bbox="659 973 691 1288">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F443-1	Computational Resources	F443-2	Host Facilities And/Or Platforms	1) Engagement Tactics Selection (And Specification)
#	Requirement Description							
F443-1	Computational Resources							
F443-2	Host Facilities And/Or Platforms							

INPUT	<p>F4431 - DETERMINE ALLOWABLE ENGAGEMENT ACTIONS</p> <p>1) ROE Constraints 2) Selected Engagement Strategy</p> <p>Description: This function encompasses the processes and means to identify the potential engagement actions which are allowed by the ROE-imposed constraints and the strategy selection. The function involves comparing engagement actions against ROE constraints, comparing engagement actions against the specified engagement strategy, determining precluded actions, and identifying remaining allowed engagement actions.</p>	<p>OUTPUT</p> <p>1) Allowed Engagement Actions</p>
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INPUT	F4432 - DETERMINE COMPATIBLE ENGAGEMENT ACTION SETS	OUTPUT						
<p>1) Allowed Engagement Actions 2) System Status Data</p>	<p>Description: This function encompasses the processes and means to identify and sequence compatible sets of allowed engagement actions. The function involves determining mutually exclusive and mutually compatible engagement actions, formulating sets of mutually compatible engagement actions, and sequencing the actions in each compatible set.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4432-1</td><td>Computational Resources</td></tr> <tr> <td>F4432-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4432-1	Computational Resources	F4432-2	Host Facilities And/Or Platforms	<p>1) Logically Compatible, Sequenced Sets Of Allowable Engagement Actions</p>
#	Requirement Description							
F4432-1	Computational Resources							
F4432-2	Host Facilities And/Or Platforms							

INPUT	F4433 - COMPUTE ENGAGEMENT TACTICS SELECTION METRICS	OUTPUT						
<ul style="list-style-type: none"> 1) Compatible Sets Of Allowed Engagement Actions 2) Defense Preferences 3) System Status Data 4) Situation Data 5) Object/Event Data 6) Previously Selected Engagement Tactics 	<p>Description: This function encompasses the processes and means to assess goodness metrics for the compatible sets of allowed engagement actions in relation to defense preferences, situation and other data, and previously selected engagement tactics. The function involves determining the method(s) to assess goodness of action sets, determining the data needed to assess the goodness metrics, extracting the required data from system reporting and databases, converting the data as needed to calculate the metrics, and actual calculating of the goodness metrics.</p> <table border="1" data-bbox="628 929 775 1467"> <thead> <tr> <th data-bbox="628 960 660 1298">#</th><th data-bbox="660 960 775 1298">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="693 982 726 1298">F4433-1</td><td data-bbox="693 982 775 1298">Computational Resources</td></tr> <tr> <td data-bbox="742 982 775 1298">F4433-2</td><td data-bbox="742 982 775 1298">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4433-1	Computational Resources	F4433-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Assessed Goodness Metrics For Compatible Sets Of Allowed Engagement Actions
#	Requirement Description							
F4433-1	Computational Resources							
F4433-2	Host Facilities And/Or Platforms							

INPUT	F4434 - SELECT/SPECIFY GOVERNING ENGAGEMENT TACTICS	OUTPUT						
<ul style="list-style-type: none"> 1) Compatible Sets Of Allowed Engagement Actions 2) Defense Preferences 3) Assessed Goodness Metrics 4) Situation Data 5) Object/Event Data 6) System Status Data 	<p>Description: This function encompasses the processes and means to select and specify the governing engagement tactics based on the assessed goodness metrics and data needed to specify the tactics. The function involves rank ordering of the compatible engagement action sets in accordance with each of the goodness metrics, eliminating dominated action sets, weighting the relative importance of the selection metrics based on defense preferences and other data, selecting engagement action set(s) which is (are) preferred based on all the weighted goodness metrics, and specifying the selected engagement action set(s). The specification includes the specific engagement actions and sequence(s), battle space partitioning criteria, platform preference parameters, weapons commit thresholds, required confidence of kill, and other engagement tactics parameters as applicable.</p>	<p>1) Engagement Tactics Selection (And Specification)</p> <table border="1" data-bbox="747 946 866 1438"> <thead> <tr> <th data-bbox="747 977 780 1322">#</th><th data-bbox="747 977 780 1279">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="788 977 820 1322">F4434-1</td><td data-bbox="788 977 820 1279">Computational Resources</td></tr> <tr> <td data-bbox="845 977 878 1322">F4434-2</td><td data-bbox="845 977 878 1279">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4434-1	Computational Resources	F4434-2	Host Facilities And/Or Platforms
#	Requirement Description							
F4434-1	Computational Resources							
F4434-2	Host Facilities And/Or Platforms							

INPUT	F444 - SELECT COUNTERMEASURES TACTICS	OUTPUT						
<ul style="list-style-type: none"> 1) ROE Constraints 2) Selected Engagement Strategy 3) Defense Preferences 4) Selected Engagement Tactics 5) System Status Data 6) Situation Data 7) Object/Event Data 	<p>Description: This function encompasses the processes and means to select and specify allowable countermeasures tactics in accordance with ROE-imposed constraints, the selected engagement strategy, defense preferences, the selected engagement tactics, and situation and other data. The function includes determining allowable countermeasure actions, determining compatible countermeasure action sets, computing countermeasure tactics selection metrics, and selecting and specifying the governing countermeasure tactics.</p> <table border="1" data-bbox="567 967 698 1467"> <thead> <tr> <th data-bbox="567 1389 600 1431">#</th><th data-bbox="567 998 600 1294">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="616 1389 649 1431">F444-1</td><td data-bbox="616 998 649 1294">Computational Resources</td></tr> <tr> <td data-bbox="665 1389 698 1431">F444-2</td><td data-bbox="665 967 698 1294">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F444-1	Computational Resources	F444-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Countermeasure Tactics Selection (And Specification)
#	Requirement Description							
F444-1	Computational Resources							
F444-2	Host Facilities And/Or Platforms							

INPUT	F441 - DETERMINE ALLOWABLE COUNTER-MEASURE ACTIONS	OUTPUT						
1) ROE Constraints 2) Selected Engagement Strategy 3) Selected Engagement Tactics	<p>Description: This function encompasses the processes and means to identify the potential countermeasure (CM) actions which are allowed under the current ROE-imposed constraints and the selected engagement strategy and which are compatible with the selected engagement tactics. The function involves comparing potential CM actions against ROE constraints, the specified strategy, and the specified engagement tactics to determine precluded CM actions and to identify remaining allowed CM actions.</p>	<p>1) Allowable Countermeasure Actions</p> <table> <thead> <tr> <th data-bbox="677 1330 693 1351">#</th> <th data-bbox="677 939 693 1235">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="726 1330 742 1351">F441-1</td> <td data-bbox="726 960 742 1235">Computational Resources</td> </tr> <tr> <td data-bbox="775 1330 791 1351">F441-2</td> <td data-bbox="775 908 791 1235">Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F441-1	Computational Resources	F441-2	Host Facilities And/Or Platforms
#	Requirement Description							
F441-1	Computational Resources							
F441-2	Host Facilities And/Or Platforms							

INPUT	F4442 - DETERMINE COMPATIBLE COUNTER-MEASURE ACTION SETS	OUTPUT						
<p>1) Allowable Countermeasure Actions 2) System Status Data</p>	<p>Description: This function encompasses the processes and means to identify and sequence compatible sets of allowed CM actions. The function involves determining mutually exclusive and mutually compatible CM actions, formulating sets of mutually compatible CM actions, and sequencing the actions in each set.</p> <table border="1"> <thead> <tr> <th data-bbox="540 1009 567 1431">#</th><th data-bbox="540 1009 567 1305">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="584 1009 612 1431">F4442-1</td><td data-bbox="584 1009 612 1305">Computational Resources</td></tr> <tr> <td data-bbox="628 1009 656 1431">F4442-2</td><td data-bbox="628 1009 656 1305">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4442-1	Computational Resources	F4442-2	Host Facilities And/Or Platforms	<p>1) Logically Compatible And Sequenced Sets Of Allowable Countermeasure Actions</p>
#	Requirement Description							
F4442-1	Computational Resources							
F4442-2	Host Facilities And/Or Platforms							

INPUT	F4443 - COMPUTE COUNTERMEASURE TACTICS SELECTION METRICS	OUTPUT						
<p>1) Compatible Sets Of Allowed Countermeasure Actions 2) Defense Preferences 3) Selected Engagement Tactics 4) System Status Data 5) Situation Data 6) Object/Event Data 7) Previously Selected Countermeasure Tactics</p>	<p>Description: This function encompasses the processes and means to assess goodness metrics for compatible sets of allowed CM actions in relation to defense preferences, situation and other data, and previously selected countermeasure tactics as applicable. The function involves determining the method(s) to assess goodness of CM action sets, determining the associated data needed to assess the goodness metrics, extracting the data from system reporting and databases, converting the data as needed to calculate the metrics, and actual calculating of the goodness metrics for the compatible CM action sets.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4443-1</td> <td>Computational Resources</td> </tr> <tr> <td>F4443-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4443-1	Computational Resources	F4443-2	Host Facilities And/Or Platforms	<p>1) Assessed Goodness Metrics For Compatible Countermeasure Action Sets</p>
#	Requirement Description							
F4443-1	Computational Resources							
F4443-2	Host Facilities And/Or Platforms							

INPUT	F4444 - SELECT/SPECIFY GOVERNING COUNTERMEASURE TACTICS	OUTPUT
<ul style="list-style-type: none"> 1) Compatible Sets Of Allowed Countermeasure Actions 2) Defense Preferences 3) Assessed Goodness Metrics For Sets Of Countermeasure Actions 4) Selected Engagement Tactics 5) System Status Data 6) Situation Data 7) Object/Event Data 	<p>Description: This function encompasses the processes and means to select and specify the countermeasure tactics in relation to the assessed goodness metrics, defense preferences, and situation and other data.</p> <p>The function involves rank ordering the sets of compatible CM actions in accordance with each goodness metric, eliminating dominated CM action sets, weighting the relative importance of the goodness metrics, selecting a preferred CM action set(s) with respect to all the goodness metrics, and specifying the selected countermeasure tactics. The specification includes the specific CM actions and sequence(s), survival goals by system function, asset/platform level survival goals, thresholds for use of expendable CM resources, engagement-versus-CM deconfliction criteria, and other countermeasure tactics parameters as applicable.</p>	<ul style="list-style-type: none"> 1) Countermeasure Tactics Selection (And Specification)

INPUT	F45 - EXECUTE DEFENSIVE RESPONSE	OUTPUT								
1) Defensive Response Selection Parameters 2) System Mode Selection 3) Situation Data 4) System Status Data 5) Object/Event Data (Track File) 6) Threat Objects	<p>Description: This high level function encompasses the processes and means to execute the preferred defensive response as allowed by the system mode selection in effect. The function includes assignment of values to targets/threats, allocation of targets/threats for engagement, assignment of system resources for engagement, actual engagement of targets/threats as authorized, and employment of countermeasures as authorized.</p> <table> <thead> <tr> <th data-bbox="510 1368 543 1400">#</th><th data-bbox="510 946 543 1273">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="584 1368 616 1400">F45-1</td><td data-bbox="584 745 616 1273">Battle Management Computational Resources</td></tr> <tr> <td data-bbox="641 1368 674 1400">F45-2</td><td data-bbox="641 830 674 1273">Engagement Weapons And Fire Control</td></tr> <tr> <td data-bbox="698 1368 731 1400">F45-3</td><td data-bbox="698 914 731 1273">Countermeasures Capabilities</td></tr> </tbody> </table>	#	Requirement Description	F45-1	Battle Management Computational Resources	F45-2	Engagement Weapons And Fire Control	F45-3	Countermeasures Capabilities	1) Engagement Activity Reports 2) Kill Assessment Observables Collection Requests 3) Destroyed And Residual Threats 4) Engagement Losses And Expenditures
#	Requirement Description									
F45-1	Battle Management Computational Resources									
F45-2	Engagement Weapons And Fire Control									
F45-3	Countermeasures Capabilities									

INPUT	F451 - ASSIGN VALUES TO TARGETS/THREATS	OUTPUT						
<p>1) Target Value Computation Method (Part Of Response Parameters)</p> <p>2) Situation Data</p> <p>3) Track File</p>	<p>Description: This function encompasses the processes and means to assign engagement value scores to target or threat objects in support of engagement allocation. The function includes obtaining or inferring threat value parameters, computing current threat value, and extrapolating the value into the future.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F451-1</td><td>Computational Resources</td></tr> <tr> <td>F451-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F451-1	Computational Resources	F451-2	Host Facilities And/Or Platforms	<p>1) Target/Threat Values (Over Time)</p>
#	Requirement Description							
F451-1	Computational Resources							
F451-2	Host Facilities And/Or Platforms							

INPUT	F4511 - OBTAIN OR INFER TARGET/THREAT VALUE PARAMETERS	OUTPUT
<ul style="list-style-type: none"> 1) Target value computation method 2) Situation data 3) Track file 	<p>Description: This function encompasses the processes and means to obtain or infer the parameters needed to compute target/threat value. The function involves identifying the data needed to compute target/threat value in accordance with the selected target value computation method, extracting available data from system reporting and databases, identifying missing data, and determining and executing the method(s) to estimate or infer the missing data.</p> <p># Requirement Description</p> <p>F4511-1 Computational resources</p> <p>F4511-2 Host facilities and/or platforms</p>	<ul style="list-style-type: none"> 1) Value parameters for computation of target/threat value

INPUT	OUTPUT						
<p>F4512 - COMPUTE CURRENT TARGET/THREAT VALUE</p> <p>1) Target Value Computation Method 2) Value Parameters</p>	<p>1) Current Target/Threat Value</p> <p>Description: This function encompasses the processes and means to compute the current target/threat value in accordance with the selected method and the value parameters. The function involves, as applicable to the selected method, computing the land area/asset at risk component, the destructive power/asset kill probability component, the current accumulated probability of kill for the object due to weapons already committed against it, the remaining engagement time component, any special engagement strategy or tactics components, and the aggregation of the value computation components.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4512-1</td> <td>Computational Resources</td> </tr> <tr> <td>F4512-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4512-1	Computational Resources	F4512-2	Host Facilities And/Or Platforms
#	Requirement Description						
F4512-1	Computational Resources						
F4512-2	Host Facilities And/Or Platforms						

INPUT	F4513 - EXTRAPOLATE TARGET/THREAT VALUES INTO FUTURE	OUTPUT						
<p>1) Target Value Computation Method</p> <p>2) Value Parameters</p> <p>3) Current Target/Threat Value</p> <p>4) Track File</p>	<p>Description: This function encompasses the processes and means to extrapolate target/threat values into the future in accordance with the selected target value computation method and the value parameters. Depending on the selected value computation method, the function involves estimating future times of object type and status changes, estimating future last engagement opportunity times, and computing the aggregate threat value extrapolation.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F4513-1</td><td>Computational Resources</td></tr> <tr> <td>F4513-2</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4513-1	Computational Resources	F4513-2	Host Facilities And/Or Platforms	<p>1) Target/Threat Values (Over Time)</p>
#	Requirement Description							
F4513-1	Computational Resources							
F4513-2	Host Facilities And/Or Platforms							

INPUT	F452 - ALLOCATE TARGETS/THREATS FOR ENGAGEMENT	OUTPUT						
<ul style="list-style-type: none"> 1) Strategy And Tactics Selections 2) Target/Threat Values 3) Platform Preference Parameters 4) Weapon Commit Thresholds 5) System Status Data 	<p>Description: This function encompasses the processes and means to allocate targets/threats for engagement by the SDS based on parameters from the defensive response selection. The function includes partitioning the battle space, identifying feasible weapon/target pairings, computing the weapon/target payoffs and where they are optimized in time, and selecting a preferred allocation with associated objective firing times.</p> <table border="1" style="margin-top: 20px;"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F452-1</td> <td>Computational Resources</td> </tr> <tr> <td>F452-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F452-1	Computational Resources	F452-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Target/Threat Allocation
#	Requirement Description							
F452-1	Computational Resources							
F452-2	Host Facilities And/Or Platforms							

INPUT	F4521 - PARTITION BATTLE SPACE IAW ENGAGEMENT STRATEGY/TACTICS	OUTPUT						
	<p>1) Strategy And Tactics Selection</p> <p>2) System Status Data</p> <p>3) Track File</p> <p>Description: This function encompasses the processes and means to partition the battle space in order to avoid span of control problems and to reduce and level the data distribution and processing loads associated with battle management. The function includes identifying the relevant type of battle space partitioning, identifying the preferred size and scope of the partitions, mapping the targets/threats into the partitions, and mapping the SDS engagement and engagement support resources into the partitions.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 10%;">#</th> <th style="text-align: left;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">F4521-1</td> <td>Computational Resources</td> </tr> <tr> <td style="vertical-align: top;">F4521-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4521-1	Computational Resources	F4521-2	Host Facilities And/Or Platforms	<p>1) Battle Space Partitions</p>
#	Requirement Description							
F4521-1	Computational Resources							
F4521-2	Host Facilities And/Or Platforms							

INPUT	F4522 - IDENTIFY FEASIBLE WEAPON ASSET/TARGET PAIRINGS AND TIMES	OUTPUT
<ul style="list-style-type: none"> 1) Battle Space Partitions 2) System Status Data 3) Track File 	<p>Description: This function encompasses the processes and means to identify feasible weapon/target pairings and times within the battle space partitions based on the trajectories of the targets/threats, the positions and motions of weapon platforms, and the weapon engagement envelopes. The function involves determining the appropriate extrapolation methods, extrapolating the threat object and weapon platform positions and the weapon envelopes into the future, and estimating the engagement opportunity windows, as defined by the earliest and latest engagement times.</p>	<ul style="list-style-type: none"> 1) Feasible Weapon Asset/Target Pairings Over Time

#	Requirement Description
F4522-1	Computational Resources
F4522-2	Host Facilities And/Or Platforms

INPUT	F4523 - ASSESS PAYOFF OF FEASIBLE PAIRINGS AND TIMES	OUTPUT						
1) Target/Threat Values 2) Platform Preference Parameters 3) Feasible Weapon Asset/Target Pairing Over Time 4) Track File 5) System Status Data 6) Situation Data 7) Last Target/Threat Allocation	<p>Description: This function encompasses the processes and means to estimate the engagement payoffs over time for each of the feasible weapon asset/target pairings. The function involves receiving the time-dependent target/threat values, estimating the single-shot probabilities of kill over time, estimating the platform preferences over time, computing aggregate expected payoffs over time, determining the times when the weapon/target pairing payoffs are maximized, and determining the sensitivities of the optimum firing times, as applicable to the particular engagement phase allocation algorithms.</p> <table> <thead> <tr> <th data-bbox="621 931 654 1396">#</th><th data-bbox="621 931 654 1227">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="670 931 703 1396">F4523-1</td><td data-bbox="670 931 703 1227">Computational Resources</td></tr> <tr> <td data-bbox="719 931 752 1396">F4523-2</td><td data-bbox="719 931 752 1227">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4523-1	Computational Resources	F4523-2	Host Facilities And/Or Platforms	1) Weapon/Target Pairing Payoffs Over Time
#	Requirement Description							
F4523-1	Computational Resources							
F4523-2	Host Facilities And/Or Platforms							

INPUT	F4524 - SELECT PREFERRED ALLOCATION AND FIRING TIMES	OUTPUT
<p>1) Strategy And Tactics Selection 2) Weapon Commit Thresholds 3) Weapon/Target Pairing Payoffs Over Time</p> <p>Description: This function encompasses the processes and means to select a set of preferred target/threat allocations and engagement times based on the selected engagement strategy/tactics, weapon/target pairing payoffs, and weapon commit thresholds. The function involves determining the time budget for solving the allocation problem, identifying primary and fallback allocation algorithms, loading and executing the allocation algorithms, determining satisfactory algorithm completion at the end of the time budget, identifying the allocation from the primary or backup algorithm (depending upon satisfactory completion), and appending associated payoff and objective firing time data to the allocation for use in assigning weapons firing sequences.</p>	<p>1) Target/Threat Allocation</p>	

#	Requirement Description
F4524-1	Computational Resources
F4524-2	Host Facilities And/Or Platforms

INPUT	F453 - ASSIGN RESOURCES FOR ENGAGEMENT	OUTPUT						
1) Target/Threat Allocation 2) Specified Engagement Actions 3) System Status Data 4) Track File	<p>Description: This function encompasses the processes and means to assign and task SDS resources in order to engage the allocated targets and threats. This function includes assigning weapon firing sequences, assigning fire control requirements, requesting or assigning target designation requirements, and requesting kill assessment observables collection. The resources are tasked based on their availability and constraints, the selected engagement tactics, and the preferred set of target/threat allocations.</p> <table> <thead> <tr> <th data-bbox="556 973 580 1431">#</th><th data-bbox="556 994 580 1326">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="597 1364 621 1453">F453-1</td><td data-bbox="597 1026 621 1294">Computational Resources</td></tr> <tr> <td data-bbox="646 1364 670 1453">F453-2</td><td data-bbox="646 1163 670 1311">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F453-1	Computational Resources	F453-2	Host Facilities And/Or Platforms	1) Engagement Asset Taskings 2) Kill Assessment Collection Requests
#	Requirement Description							
F453-1	Computational Resources							
F453-2	Host Facilities And/Or Platforms							

INPUT	OUTPUT	F4531 - ASSIGN WEAPON FIRING SEQUENCE	1) Weapon Firing Tasks						
1) Target/Threat Allocation 2) Specified Engagement Actions 3) System Status Data 4) Track File		<p>Description: This function encompasses the processes and means to assign and task the weapon firing sequence for weapon platforms/sites. The function involves receiving the target/threat allocation and associated data, determining the weapon platform/site firing rate constraints, determining a firing sequence to optimize the net defense payoff, assigning specific weapons for the selected sequence, and tasking the weapon assets.</p> <table> <thead> <tr> <th data-bbox="518 994 541 1417">#</th><th data-bbox="518 973 541 1311">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="567 1364 590 1459">F4531-1</td><td data-bbox="567 1015 590 1311">Computational Resources</td></tr> <tr> <td data-bbox="616 1364 639 1459">F4531-2</td><td data-bbox="616 952 639 1311">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4531-1	Computational Resources	F4531-2	Host Facilities And/Or Platforms	
#	Requirement Description								
F4531-1	Computational Resources								
F4531-2	Host Facilities And/Or Platforms								

INPUT	F4532 - ASSIGN FIRE CONTROL REQUIREMENTS	OUTPUT						
1) Specified Engagement Actions 2) Weapon Firing Taskings 3) System Status Data 4) Track File	<p>Description: This function encompasses the processes and means to assign fire control requirements based on the specified engagement actions and weapon firing sequence taskings (and the particular weapon fire control requirements). This function involves monitoring specific weapon firing taskings, determining fire control requirements in accordance with the selected engagement tactics, determining available fire control assets, and assigning and tasking the fire control assets.</p> <table border="1" data-bbox="603 939 734 1446"> <thead> <tr> <th data-bbox="603 960 636 1298">#</th><th data-bbox="603 960 669 1298">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="644 960 677 1298">F4532-1</td><td data-bbox="644 960 709 1298">Computational Resources</td></tr> <tr> <td data-bbox="709 960 742 1298">F4532-2</td><td data-bbox="709 960 775 1298">Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F4532-1	Computational Resources	F4532-2	Host Facilities And/Or Platforms	1) Fire Control Taskings
#	Requirement Description							
F4532-1	Computational Resources							
F4532-2	Host Facilities And/Or Platforms							

INPUT	OUTPUT
F4533 - REQUEST/ASSIGN TARGET DESIGNATION REQUIREMENTS	
1) Specified Engagement Actions 2) Weapon Firing Taskings 3) Track File 4) System Status Data	1) Target Designation Taskings
	Description: This function encompasses the processes and means to request or assign target designation requirements based on the weapon firing sequence taskings and the specified engagements actions. This function involves monitoring the specific weapon firing taskings, determining target designation requirements in accordance with the selected engagement tactics, determining available target designation assets, requesting or assigning the target designation responsibilities, and ultimately tasking target designation assets.
	# Requirement Description
	F4533-1 Computational Resources
	F4533-2 Host Facilities And/Or Platforms

<p>INPUT</p> <ul style="list-style-type: none"> 1) Specified Engagement Actions 2) Weapon Firing Taskings 3) Track File 4) System Status Data 	<p>F4534 - REQUEST KILL ASSESSMENT OBSERVABLES COLLECTION</p> <p>Description: This function encompasses the processes and means to request kill assessment observables collection based on the specific weapon firing sequence taskings and the specified engagement actions. The function involves monitoring the weapon firing taskings, determining kill assessment observables collection requirements in accordance with the selected engagement tactics, and requesting S&D kill assessment observables collection.</p>	<p>OUTPUT</p> <ul style="list-style-type: none"> 1) Kill Assessment Collection Requests
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INPUT	OUTPUT										
	<p>1) Weapon And Fire Control Activities Reports 2) Destroyed Or Residual Threat 3) Weapon Expenditure</p>										
F454 - ENGAGE TARGETS/THREATS											
<p>1) Alert Level 2) Weapon Firing Taskings 3) Engagement Enablement 4) Fire Control Tasking 5) Target Designation Tasking 6) Track Files 7) Threat Object</p>	<p>Description: This function encompasses the processes and means to engage the threats and targets based on the weapon firing taskings and in accordance with the alert levels and engagement enablements. This function includes preparing and orienting the weapon, firing the weapon, providing needed guidance or aiming corrections, designating the target, and completing the target intercept. This function requires specific release authority from the positive control cell in order to engage the targets and threats.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F454-1</td><td>Message Authentication Means</td></tr> <tr> <td>F454-2</td><td>Weapon Subsystem</td></tr> <tr> <td>F454-3</td><td>Fire Control Subsystem</td></tr> <tr> <td>F454-4</td><td>Host Facilities And/Or Platforms</td></tr> </tbody> </table>	#	Requirement Description	F454-1	Message Authentication Means	F454-2	Weapon Subsystem	F454-3	Fire Control Subsystem	F454-4	Host Facilities And/Or Platforms
#	Requirement Description										
F454-1	Message Authentication Means										
F454-2	Weapon Subsystem										
F454-3	Fire Control Subsystem										
F454-4	Host Facilities And/Or Platforms										

INPUT	F4541 - PREPARE AND ORIENT WEAPON	OUTPUT								
<ul style="list-style-type: none"> 1) Alert Level 2) Weapon Firing Tasking 3) Track File 	<p>Description: This function encompasses the processes and means to complete preparation of weapons platforms/sites and weapons for firing, based on the SDS alert level and weapon firing taskings. The function involves authenticating the alert level and firing tasking commands, computing required weapon orientation, and, if authorized, loading data into the weapon, loading weapon energy production components (e.g., for directed energy weapons), loading other weapon components as needed (e.g., cryogenics for infrared seekers), and completing weapon preparation and orientation (e.g., disconnect cables and hoses on interceptors).</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15%;"><u>#</u></th> <th style="text-align: center; width: 85%;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F4541-1</td> <td>Message Authentication Means</td> </tr> <tr> <td style="text-align: center;">F4541-2</td> <td>Weapon Subsystem</td> </tr> <tr> <td style="text-align: center;">F4541-3</td> <td>Host Platform Or Site</td> </tr> </tbody> </table>	<u>#</u>	Requirement Description	F4541-1	Message Authentication Means	F4541-2	Weapon Subsystem	F4541-3	Host Platform Or Site	<ul style="list-style-type: none"> 1) Prepared Weapon
<u>#</u>	Requirement Description									
F4541-1	Message Authentication Means									
F4541-2	Weapon Subsystem									
F4541-3	Host Platform Or Site									

INPUT	OUTPUT						
F4542 - FIRE WEAPON							
<p>1) Engagement Enablement 2) Weapon Firing Taskings 3) Prepared Weapons</p> <p>Description: This function encompasses the processes and means to fire an SDS weapon. The function involves authenticating weapon firing enablement, starting the energy or mass delivery component if authorized, and controlling the output of that component. The function requires release authority from the positive control cell.</p> <table> <thead> <tr> <th data-bbox="512 958 540 1417">#</th><th data-bbox="512 931 540 1262">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="556 1353 584 1459">F4542-1</td><td data-bbox="556 931 584 1262">Message Authentication Means</td></tr> <tr> <td data-bbox="616 1353 644 1459">F4542-2</td><td data-bbox="616 1036 644 1262">Weapon Subsystem</td></tr> </tbody> </table>	#	Requirement Description	F4542-1	Message Authentication Means	F4542-2	Weapon Subsystem	<p>1) Fired Weapon 2) Weapon Expenditure</p>
#	Requirement Description						
F4542-1	Message Authentication Means						
F4542-2	Weapon Subsystem						

<p>INPUT</p> <p>1) Engagement Enablement 2) Fire Control Tasking 3) Fired Weapon 4) Track Files</p> <p>OUTPUT</p> <p>1) Corrected Weapons</p>								
<p>Description: This function encompasses the processes and means to provide the weapon with needed guidance or aiming corrections based on the fire control taskings, engagement enablement, and track file data. This requires an extrapolation of the target state vector (from the track file or fire control subsystem) and the weapon state vector (from the track file, the weapon's own navigation means, or a separate fire control subsystem) in order to predict a new intercept point. This function may also include providing the weapon with antenna steering commands to control the weapon from the primary or secondary platforms. In general, the function requires authentication of guidance/aiming enablement before updates are allowed to be provided to the weapon. The weapon must also be able to execute the guidance or aiming correction.</p> <table border="1" data-bbox="747 925 943 1431"> <thead> <tr> <th>#</th> <th><u>Requirement Description</u></th> </tr> </thead> <tbody> <tr> <td>F4543-1</td> <td>Message Authentication Means</td> </tr> <tr> <td>F4543-2</td> <td>Fire Control Subsystem</td> </tr> <tr> <td>F4543-3</td> <td>Weapon Subsystem</td> </tr> </tbody> </table>	#	<u>Requirement Description</u>	F4543-1	Message Authentication Means	F4543-2	Fire Control Subsystem	F4543-3	Weapon Subsystem
#	<u>Requirement Description</u>							
F4543-1	Message Authentication Means							
F4543-2	Fire Control Subsystem							
F4543-3	Weapon Subsystem							

INPUT	OUTPUT								
<p>F4544 - DESIGNATE TARGET FOR INTERCEPT</p> <p>1) Engagement Enablement 2) Target Designation Tasking 3) Corrected Weapon 4) Track Files 5) Threat Object</p> <p>Description: This function encompasses the processes and means to provide the weapon with a designation of the target before the lethal energy delivery time is reached in order for the weapon to complete its intercept. The function involves authenticating target designation enablement, extrapolating positions of the target and other objects, optionally associating signature data with the target and other objects, and execution of the designation if authorized. Target designation may be by a target object map or similar means, by semi-active designation, or by fully active designation.</p>	<p>1) Designated Target</p> <table> <thead> <tr> <th data-bbox="731 994 752 1417">#</th><th data-bbox="731 984 752 1300">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="796 1364 817 1459">F4544-1</td><td data-bbox="796 963 817 1300">Message Authentication Means</td></tr> <tr> <td data-bbox="858 1364 879 1459">F4544-2</td><td data-bbox="858 846 879 1300">Fire Control/Target Designation Subsystem</td></tr> <tr> <td data-bbox="920 1364 941 1459">F4544-3</td><td data-bbox="920 1079 941 1300">Weapon Subsystem</td></tr> </tbody> </table>	#	Requirement Description	F4544-1	Message Authentication Means	F4544-2	Fire Control/Target Designation Subsystem	F4544-3	Weapon Subsystem
#	Requirement Description								
F4544-1	Message Authentication Means								
F4544-2	Fire Control/Target Designation Subsystem								
F4544-3	Weapon Subsystem								

<p>INPUT</p> <ul style="list-style-type: none"> 1) Designated Target 2) Corrected Weapons 3) Threat Object 	<p>F4545 - COMPLETE THE INTERCEPT</p> <p>Description: This function encompasses the processes and means to complete the weapon intercept in order to destroy or negate the target. This function involves acquiring and identifying the target with a weapon sensor(s), determining relative positions and velocities, computing final corrections for intercept, executing final maneuvers or aiming corrections, and delivering lethal energy to the target. It can also include employing lethality enhancers as in the case of a kinetic energy weapon.</p>	<p>OUTPUT</p> <p>1) Destroyed Or Residual Threat</p>
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INPUT	F455 - EMPLOY COUNTERMEASURES	OUTPUT								
<ul style="list-style-type: none"> 1) Specified countermeasure actions 2) Alert level 3) Countermeasure enablements 4) Engagement asset taskings 5) Track file 6) Residual threats 	<p>Description: This function encompasses the processes and means to assign and employ the countermeasure resources in order to mitigate attempted suppression of the SDS. The function includes resolving conflicts between engagement and countermeasure actions, assigning a preferred countermeasure action sequence, and employing the selected countermeasures. In general, the employment of countermeasures requires enablement from the positive control cell in order to minimize the possibility of actions being perceived as provocations, to conserve SDS asset life or capabilities, and/or to prevent disclosure of classified capabilities.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15px;">#</th> <th style="text-align: center;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F455-1</td> <td>Message authentication means</td> </tr> <tr> <td style="text-align: center;">F455-2</td> <td>Computational resources</td> </tr> <tr> <td style="text-align: center;">F455-3</td> <td>Countermeasure capabilities and resources</td> </tr> </tbody> </table>	#	Requirement Description	F455-1	Message authentication means	F455-2	Computational resources	F455-3	Countermeasure capabilities and resources	<ul style="list-style-type: none"> 1) Countermeasure activity reports 2) Countermeasure actions 3) Countermeasure expenditures 4) Battle losses
#	Requirement Description									
F455-1	Message authentication means									
F455-2	Computational resources									
F455-3	Countermeasure capabilities and resources									

INPUT	F4551 - DECONFLICT ENGAGEMENT AND COUNTERMEASURE ACTIONS	OUTPUT
<p>1) Specified Countermeasure Actions</p> <p>2) Engagement Asset Taskings</p>	<p>Description: This function encompasses the processes and means to resolve conflicts among the assigning and tasking of resources for engagement and countermeasure actions. The function includes receiving specified countermeasure actions, monitoring engagement asset taskings, identifying countermeasure actions in conflict with engagement taskings, and identifying nonconflicting time windows for employing countermeasure actions. This requires the function to determine the implications of executing a countermeasure action on assigned or tasked engagement actions, such as the effect of executing an avoidance maneuver at a weapon platform on the ability to fire the weapon, to continue to provide guidance or aiming corrections, or to provide target designation.</p>	<p>1) Countermeasure Time Windows And Constraints</p>

#	Requirement Description
F4551-1	Computational Resources
F4551-2	Host Facilities And/Or Platforms

INPUT	OUTPUT						
<p style="text-align: center;">F4552 - ASSIGN COUNTERMEASURE ACTION SEQUENCE</p> <p>1) Specified Countermeasure Actions 2) Countermeasure Time Windows And Constraints 3) Track File</p>	<p style="text-align: center;">1) Preferred Countermeasure Action Sequence</p> <p>Description: This function encompasses the processes and means to select a preferred countermeasure sequence for the specified countermeasure actions which conforms to the available time windows and constraints. This function involves determining feasible bounds for employing the countermeasures, selecting a feasible and preferred countermeasure sequence and timing, and assigning actions and timing to countermeasure resources. It also involves reporting the assigned countermeasure action sequences as situation information for other SDS functions.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 10%;">#</th> <th style="text-align: left;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">F4552-1</td> <td>Computational Resources</td> </tr> <tr> <td style="vertical-align: top;">F4552-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	#	Requirement Description	F4552-1	Computational Resources	F4552-2	Host Facilities And/Or Platforms
#	Requirement Description						
F4552-1	Computational Resources						
F4552-2	Host Facilities And/Or Platforms						

INPUT	F4553 - EMPLOY SELECTED COUNTERMEASURES	OUTPUT
<p>1) Alert Level 2) Countermeasure Enablement 3) Preferred Countermeasure Action Sequence 4) Residual Threats</p> <p>Description: This function encompasses the processes and means to employ the selected countermeasures in accordance with the preferred countermeasure action sequence and countermeasures enablement commands. This function involves authenticating the countermeasure enablement, activating the countermeasure resources at the assigned times, controlling or adjusting the countermeasure execution, and ceasing execution of the countermeasures as assigned or as directed (e.g., by a disenablement command). Potential countermeasures include, but are not limited to, electronic countermeasures (ECM), decoys and deception, and avoidance maneuvers.</p>	<p>1) Countermeasure Actions 2) Countermeasure Expenditures 3) Battle Losses</p>	

#	Requirement Description
F4553-1	Message Authentication Means
F4553-2	Countermeasure Capabilities And Resources

INPUT	F46 - MAINTAIN SYSTEM CAPABILITY	OUTPUT								
<ul style="list-style-type: none"> 1) System configuration criteria 2) Recovery and reconstitution priorities 3) Operational requirements 4) Range safety requirements 5) Situation data 6) Environment conditions 7) Deployment handover data and information 	<p>Description: This high level function encompasses the processes and means to maintain the capability of the SDS to meet its mission requirements. The function includes managing the system operational configuration, reconstituting the system, maintaining and supporting the system, and providing launch assets.</p> <table border="1" data-bbox="507 952 719 1459"> <thead> <tr> <th data-bbox="507 1374 523 1417">#</th><th data-bbox="507 952 556 1332">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="556 1374 572 1459">F46-1</td><td data-bbox="556 952 605 1332">New and reconstitution resources</td></tr> <tr> <td data-bbox="605 1374 621 1459">F46-2</td><td data-bbox="605 952 654 1332">Management and operation and maintenance resources</td></tr> <tr> <td data-bbox="654 1374 670 1459">F46-3</td><td data-bbox="654 952 703 1332">Launch resources</td></tr> </tbody> </table>	#	Requirement Description	F46-1	New and reconstitution resources	F46-2	Management and operation and maintenance resources	F46-3	Launch resources	<ul style="list-style-type: none"> 1) System configuration (including the resources to support other functions) 2) System status data
#	Requirement Description									
F46-1	New and reconstitution resources									
F46-2	Management and operation and maintenance resources									
F46-3	Launch resources									

INPUT	F461 - MANAGE SYSTEM OPERATIONAL CONFIGURATION	OUTPUT				
<p>1) System Configuration Criteria 2) Recovery Priorities 3) Situation Data 4) Reconstituted Capabilities 5) Launch Reports And Launched Assets 6) Environment Conditions</p>	<p>Description: This function encompasses the processes and means to maintain a preferred configuration of operational SDS assets in accordance with system configuration criteria and recovery priorities. The function includes managing the space/time distribution of system assets, activating and deactivating reserve assets, providing communication connectivity and service, and obtaining and dissemination system operational status data.</p> <p><u>Requirement Description</u></p> <p>#</p> <table> <tbody> <tr> <td>F461-1</td> <td>Management And Operation Resources</td> </tr> <tr> <td>F461-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	F461-1	Management And Operation Resources	F461-2	Host Facilities And/Or Platforms	<p>1) System Configuration 2) System Status Data</p>
F461-1	Management And Operation Resources					
F461-2	Host Facilities And/Or Platforms					

INPUT	F4611 - MANAGE SPACE/TIME DISTRIBUTION OF SYSTEM ASSETS	OUTPUT						
<ul style="list-style-type: none"> 1) System Configuration Criteria 2) Recovery Priorities 3) Situation Data 4) System Status Data 5) Activated And Deactivated Reserve Assets 6) Reconstituted Capabilities 7) Launch Reports And Launched Assets 	<p>Description: This function encompasses the processes and means to maintain a preferred space/time distribution of operational system assets in accordance with system configuration criteria and system recovery priorities. The function involves implementing normal configuration changes, identifying deficiencies of current asset distributions, defining options to improve the distribution, selecting and planning redistributions of assets, tasking specific redistribution actions, and executing the redistribution taskings.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15%;"><u>#</u></th> <th style="text-align: center; width: 85%;"><u>Requirement Description</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F4611-1</td> <td>Management And Operations Resources</td> </tr> <tr> <td style="text-align: center;">F4611-2</td> <td>Host Facilities And/Or Platforms</td> </tr> </tbody> </table>	<u>#</u>	<u>Requirement Description</u>	F4611-1	Management And Operations Resources	F4611-2	Host Facilities And/Or Platforms	<ul style="list-style-type: none"> 1) Preferred Distribution Of Operational System Assets
<u>#</u>	<u>Requirement Description</u>							
F4611-1	Management And Operations Resources							
F4611-2	Host Facilities And/Or Platforms							

INPUT	F4612 - ACTIVATE AND DEACTIVATE RESERVE ASSETS	OUTPUT
<p>1) System Configuration Criteria 2) Recovery Priorities 3) Preferred Distribution Of System Assets 4) System Status Data</p>	<p>Description: This function encompasses the processes and means to activate and deactivate reserve system assets to enhance the pool of operational assets or to preserve the pool of reserve assets, as the distribution of assets, the system configuration criteria, and the recovery priorities dictate. The function involves determining or receiving requirements for activation/deactivation of reserve assets, identifying the applicable procedure, executing the asset activation or deactivation, and handing over activated assets to the space/time distribution management function.</p>	<p>1) Activated Reserve Assets 2) Deactivated Reserve Assets</p>

#	Requirement Description
F4612-1	Management And Operation Resources
F4612-2	Host Facilities

INPUT	F4613 - PROVIDE COMMUNICATIONS CONNECTIVITY & SERVICES	OUTPUT
<p>1) Environmental Conditions 2) Activated/Deactivated Assets 3) Preferred Asset Distribution 4) Systems Status Data 5) User Messages 6) Communication Resources 7) System Configuration Criteria</p> <p>Description: This function provides the capability to install, test and maintain communications links between SDS elements. The communication system continuously monitors its links and equipment and will maintain real-time system connectivity. Congestion control is provided through alternate routing schemes and the security functions such as encryption/decryption and message authentication will be implemented. The basic function is to deliver error-free messages in a timely manner to other elements.</p>	<p>1) Communications Service And Status 2) Messages</p>	

#	Requirement Description
F4613-1	System And Environment Monitoring
F4613-2	Network Control
F4613-3	Data Transport
F4613-4	Message Routing And Link Congestion Control
F4613-5	System Security

INPUT	F46131 - PERFORM SYSTEM AND ENVIRONMENT MONITORING	OUTPUT								
<p>1) Environmental Conditions 2) Communications Monitoring And Environment Resources 3) Communications System Configuration</p>	<p>Description: This process collects data on node locations, link performance, threat activities and the communications environment. The data is analyzed to determine link and channel effectiveness and to determine potential threats. Additional processing provides measures of link degradation as well as location, type and priority of threats to the communications system.</p> <table> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F46131-1</td><td>Status Information Communication Resource</td></tr> <tr> <td>F46131-2</td><td>Communication Link And Channel Performance</td></tr> <tr> <td>F46131-3</td><td>Communications Threat Situation</td></tr> </tbody> </table>	#	Requirement Description	F46131-1	Status Information Communication Resource	F46131-2	Communication Link And Channel Performance	F46131-3	Communications Threat Situation	<p>1) Congested Links 2) Unnegated Threat 3) Degraded Links/Channels 4) Communication Status Requests</p>
#	Requirement Description									
F46131-1	Status Information Communication Resource									
F46131-2	Communication Link And Channel Performance									
F46131-3	Communications Threat Situation									

INPUT	F461311 - COLLECT INFORMATION	OUTPUT												
<ul style="list-style-type: none"> 1) Environmental Conditions 2) Communication Status 3) Communications Monitoring And Environment Resources 4) Communications System Configuration 	<p>Description: This process collects communication resource status information in order to develop and update a communications Status File (to include link status and node status) and a Configuration File (including node locations). This status is fused with reports from external systems in order to discern threats to communication functions and resources.</p> <table border="1" data-bbox="502 952 816 1459"> <thead> <tr> <th data-bbox="502 1374 518 1396">#</th><th data-bbox="502 952 518 1248">Requirements Description</th></tr> </thead> <tbody> <tr> <td data-bbox="551 1332 567 1459">F461311-1</td><td data-bbox="551 1036 567 1248">Link Event Counts</td></tr> <tr> <td data-bbox="616 1332 633 1459">F461311-2</td><td data-bbox="616 1036 633 1248">Node Location Lists</td></tr> <tr> <td data-bbox="665 1332 682 1459">F461311-3</td><td data-bbox="665 889 682 1248">NUDET And Jamming Interference</td></tr> <tr> <td data-bbox="714 1332 731 1459">F461311-4</td><td data-bbox="714 1100 731 1248">Link Statistics</td></tr> <tr> <td data-bbox="763 1332 780 1459">F461311-5</td><td data-bbox="763 973 780 1248">Threat Summary Report</td></tr> </tbody> </table>	#	Requirements Description	F461311-1	Link Event Counts	F461311-2	Node Location Lists	F461311-3	NUDET And Jamming Interference	F461311-4	Link Statistics	F461311-5	Threat Summary Report	<ul style="list-style-type: none"> 1) Communications Status Requests 2) Questionable Link Status 3) Potential Communication Threats
#	Requirements Description													
F461311-1	Link Event Counts													
F461311-2	Node Location Lists													
F461311-3	NUDET And Jamming Interference													
F461311-4	Link Statistics													
F461311-5	Threat Summary Report													

INPUT	F461312 - EVALUATE COMMUNICATION PERFORMANCE	OUTPUT										
<p>1) Communications Monitoring And Environment Resources</p> <p>2) Questionable Link Status</p> <p>3) Communication System Configuration</p>	<p>Description: This function analyzes traffic statistics from the current and previous control and monitor cycles to produce performance summaries by link and by channel (data interface).</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461312-1</td> <td>Link Throughput</td> </tr> <tr> <td>F461312-2</td> <td>Link Integrity</td> </tr> <tr> <td>F461312-3</td> <td>Link Effectiveness</td> </tr> <tr> <td>F461312-4</td> <td>Channel Effectiveness</td> </tr> </tbody> </table>	#	Requirement Description	F461312-1	Link Throughput	F461312-2	Link Integrity	F461312-3	Link Effectiveness	F461312-4	Channel Effectiveness	<p>1) Link And Channel Degradation</p> <p>2) Communication Status</p>
#	Requirement Description											
F461312-1	Link Throughput											
F461312-2	Link Integrity											
F461312-3	Link Effectiveness											
F461312-4	Channel Effectiveness											

INPUT	F461313 - ASSESS COMMUNICATION SITUATION	OUTPUT								
<p>1) Potential Communication Threats 2) Communications Monitoring And Environment Resources 3) Link And Channel Degradation 4) Communication System Configuration</p>	<p>Description: This process fuses information from various other C&M communication processes in order to discern the most disruptive threats to communication functions and resources.</p> <table border="1"> <thead> <tr> <th data-bbox="518 1036 540 1438">#</th><th data-bbox="518 1438 540 1543">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="567 1036 589 1438">F461313-1</td><td data-bbox="567 1438 589 1543">Link Degradations</td></tr> <tr> <td data-bbox="616 1036 638 1438">F461313-2</td><td data-bbox="616 1438 638 1543">Active Threat Identification</td></tr> <tr> <td data-bbox="665 1036 687 1438">F461313-3</td><td data-bbox="665 1438 687 1543">Threat Prioritization</td></tr> </tbody> </table>	#	Requirement Description	F461313-1	Link Degradations	F461313-2	Active Threat Identification	F461313-3	Threat Prioritization	<p>1) Congested Links 2) Degraded Links/Channels 3) Unnegated Threats</p>
#	Requirement Description									
F461313-1	Link Degradations									
F461313-2	Active Threat Identification									
F461313-3	Threat Prioritization									

INPUT	F46132 - CONTROL NETWORK	OUTPUT										
1) Preferred Asset Distribution 2) Activated/Deactivated Assets 3) Control Network Resources 4) H/W And S/W Change Requests 5) System Status Data 6) Degraded Links/Channels 7) Routing Tables 8) System Reconfiguration Criteria 9) Recovery Priorities	<p>Description: This function provides physical control of the communications system. Configuration/reconfiguration and reconstitution of physical resources will be accomplished. System, subsystem, link and component test and evaluation will be accomplished in this function. Media control for radio, laser and landline links is directed by this function. The process maintains the hardware and software configuration and will control the implementation of new communications functions into the system.</p> <table> <thead> <tr> <th data-bbox="633 889 665 1396">#</th> <th data-bbox="633 994 665 1290">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="682 889 714 1396">F46132-1</td> <td data-bbox="682 994 714 1290">Network Configuration And Reconstitution</td> </tr> <tr> <td data-bbox="731 889 763 1396">F46132-2</td> <td data-bbox="731 994 763 1290">H/W And S/W Configuration</td> </tr> <tr> <td data-bbox="780 889 812 1396">F46132-3</td> <td data-bbox="780 994 812 1290">Media Control</td> </tr> <tr> <td data-bbox="829 889 861 1396">F46132-4</td> <td data-bbox="829 994 861 1290">Technical Control</td> </tr> </tbody> </table>	#	Requirement Description	F46132-1	Network Configuration And Reconstitution	F46132-2	H/W And S/W Configuration	F46132-3	Media Control	F46132-4	Technical Control	1) Communication System Configuration 2) Status Reports And Maintenance Requests 3) Test Messages
#	Requirement Description											
F46132-1	Network Configuration And Reconstitution											
F46132-2	H/W And S/W Configuration											
F46132-3	Media Control											
F46132-4	Technical Control											

INPUT	F461321 - DETERMINE CONFIGURATION/RECONFIGURATION & RECONSTITUTION REQUIREMENTS	OUTPUT												
<ul style="list-style-type: none"> 1) Degraded Links/Channels 2) Routing Tables 3) System Reconfiguration Criteria 4) Recovery Priorities 5) Reconfiguration Recommendation 6) Preferred Asset Distribution 7) Activated/Deactivated Assets 8) Configuration And Reconstitution Resources 	<p>Description: Reconfigures subnetworks periodically to accommodate space-based platform motions or when triggered by F46131. Determines actions to take to restore SDS communications after attack or another event causing loss of assets.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461321-1</td> <td>Acquire And Release Links</td> </tr> <tr> <td>F461321-2</td> <td>Network Optimization</td> </tr> <tr> <td>F461321-3</td> <td>Network Routing Map And Configuration Distribution</td> </tr> <tr> <td>F461321-4</td> <td>Link Event History</td> </tr> <tr> <td>F461321-5</td> <td>Network Reconstitution</td> </tr> </tbody> </table>	#	Requirement Description	F461321-1	Acquire And Release Links	F461321-2	Network Optimization	F461321-3	Network Routing Map And Configuration Distribution	F461321-4	Link Event History	F461321-5	Network Reconstitution	<ul style="list-style-type: none"> 1) Communication System Configuration
#	Requirement Description													
F461321-1	Acquire And Release Links													
F461321-2	Network Optimization													
F461321-3	Network Routing Map And Configuration Distribution													
F461321-4	Link Event History													
F461321-5	Network Reconstitution													

INPUT	F461322 - MANAGE H/W & S/W CONFIGURATION	OUTPUT										
<p>1) Routing Tables 2) H/W And S/W Change Requests 3) Maintenance Actions 4) H/W And S/W Configuration Resources</p> <p>Description: Maintain H/W and S/W configuration database and control the addition of new/modified components.</p>	<p>1) Status Reports And Maintenance Requests</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461322-1</td> <td>Network Configuration Change Requirements</td> </tr> <tr> <td>F461322-1</td> <td>System Parameters And Database Updates</td> </tr> <tr> <td>F461322-3</td> <td>System Software Updates</td> </tr> <tr> <td>F461322-4</td> <td>New/Additional System Components</td> </tr> </tbody> </table>	#	Requirement Description	F461322-1	Network Configuration Change Requirements	F461322-1	System Parameters And Database Updates	F461322-3	System Software Updates	F461322-4	New/Additional System Components	
#	Requirement Description											
F461322-1	Network Configuration Change Requirements											
F461322-1	System Parameters And Database Updates											
F461322-3	System Software Updates											
F461322-4	New/Additional System Components											

<p>INPUT</p> <ul style="list-style-type: none"> 1) Routing Tables 2) Communication System Configuration 3) Media Control Resources 	<p>F461323 - PROVIDE MEDIA CONTROL</p> <p>Description: Control various types of communications media including radios, lasercom and terrestrial networks including fiber-optic transmission system.</p>	<p>OUTPUT</p> <p>1) Revised Media Control</p>								
		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding-bottom: 5px;">#</th><th style="text-align: left; padding-bottom: 5px;"><u>Requirement Description</u></th></tr> </thead> <tbody> <tr> <td style="padding-top: 5px;">F461323-1</td><td style="padding-top: 5px;">Radio Link Control</td></tr> <tr> <td style="padding-top: 5px;">F461323-2</td><td style="padding-top: 5px;">Laser Link Control</td></tr> <tr> <td style="padding-top: 5px;">F461323-3</td><td style="padding-top: 5px;">Ground Network Control</td></tr> </tbody> </table>	#	<u>Requirement Description</u>	F461323-1	Radio Link Control	F461323-2	Laser Link Control	F461323-3	Ground Network Control
#	<u>Requirement Description</u>									
F461323-1	Radio Link Control									
F461323-2	Laser Link Control									
F461323-3	Ground Network Control									

INPUT	F461324 - CONDUCT TECHNICAL CONTROL	OUTPUT										
<ul style="list-style-type: none"> 1) System Reconfiguration Criteria 2) Routing Tables 3) Revised Media Control 4) Communication System Configuration 5) System Status Data 6) Technical Control Resources 	<p>Description: Provides system level tests on channels and links in addition to detailed fault detection, isolation and repair/replacement at the component level.</p> <table border="1" data-bbox="437 861 714 1453"> <thead> <tr> <th data-bbox="445 1347 470 1389">#</th><th data-bbox="445 956 470 1252">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="494 1305 518 1453">F461324-1</td><td data-bbox="494 1104 518 1252">System Tests</td></tr> <tr> <td data-bbox="559 1305 584 1453">F461324-2</td><td data-bbox="559 1094 584 1252">Fault Detection</td></tr> <tr> <td data-bbox="616 1305 641 1453">F461324-3</td><td data-bbox="616 1094 641 1252">Fault Correction</td></tr> <tr> <td data-bbox="674 1305 698 1453">F461324-4</td><td data-bbox="674 861 698 1252">Patch Around Or Repair Components</td></tr> </tbody> </table>	#	Requirement Description	F461324-1	System Tests	F461324-2	Fault Detection	F461324-3	Fault Correction	F461324-4	Patch Around Or Repair Components	<ul style="list-style-type: none"> 1) Reconfiguration Recommendation 2) Test Messages 3) Maintenance Actions
#	Requirement Description											
F461324-1	System Tests											
F461324-2	Fault Detection											
F461324-3	Fault Correction											
F461324-4	Patch Around Or Repair Components											

<p>F46133 - PERFORM DATA TRANSPORT</p> <p>INPUT</p> <ul style="list-style-type: none"> 1) User Messages 2) Test Messages 3) Messages From Security 4) Data Transport Resources 5) System Configuration Criteria <p>OUTPUT</p> <p>Description: This function implements the transmission and receipt of messages with all their associated OSI protocols. Receipt of and delivery of messages to the communications system and external users is controlled by the function.</p> <table border="1"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F46133-1</td><td>User Messages</td></tr> <tr> <td>F46133-2</td><td>Communication System Messages</td></tr> <tr> <td>F46133-3</td><td>Message Creation And Transmission</td></tr> <tr> <td>F46133-4</td><td>Message Receipt And Breakdown</td></tr> </tbody> </table>	#	Requirement Description	F46133-1	User Messages	F46133-2	Communication System Messages	F46133-3	Message Creation And Transmission	F46133-4	Message Receipt And Breakdown	<p>1) Messages</p> <p>2) Messages For Security</p>
#	Requirement Description										
F46133-1	User Messages										
F46133-2	Communication System Messages										
F46133-3	Message Creation And Transmission										
F46133-4	Message Receipt And Breakdown										

INPUT	F461331 - PROCESS USER MESSAGES	OUTPUT										
<p>1) Clear Messages 2) Messages With Authorization Added 3) Message Authentication 4) Decrypt Received Messages 5) User Message Resources 6) System Configuration Criteria</p> <p>Description: Validate user connectivity and provide initial message processing before/after protocol operations.</p>	<p>1) Messages 2) Transmitted User Messages</p> <table border="1"> <thead> <tr> <th data-bbox="409 994 442 1396">#</th><th data-bbox="409 1396 442 1978">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="474 994 507 1396">F461331-1</td><td data-bbox="474 1396 507 1978">Protocol Service For Transmissions</td></tr> <tr> <td data-bbox="540 994 572 1396">F461331-2</td><td data-bbox="540 1396 572 1978">Outgoing Message Validation</td></tr> <tr> <td data-bbox="605 994 638 1396">F461331-3</td><td data-bbox="605 1396 638 1978">Protocol Service For Received Messages</td></tr> <tr> <td data-bbox="670 994 703 1396">F461331-4</td><td data-bbox="670 1396 703 1978">Received Message Validation</td></tr> </tbody> </table>	#	Requirement Description	F461331-1	Protocol Service For Transmissions	F461331-2	Outgoing Message Validation	F461331-3	Protocol Service For Received Messages	F461331-4	Received Message Validation	
#	Requirement Description											
F461331-1	Protocol Service For Transmissions											
F461331-2	Outgoing Message Validation											
F461331-3	Protocol Service For Received Messages											
F461331-4	Received Message Validation											

INPUT	F461332 - PROCESS COMMUNICATION SYSTEM MESSAGES	OUTPUT						
<p>1) Test Messages 2) System Message Resources 3) System Configuration Criteria</p> <p>Description: This function generates messages and responses to maintain the status of the communications system.</p>	<p>1) Transmitted Communication Messages</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461332-1</td> <td>Network Control Orders</td> </tr> <tr> <td>F461332-2</td> <td>Communication Function Information</td> </tr> </tbody> </table>	#	Requirement Description	F461332-1	Network Control Orders	F461332-2	Communication Function Information	
#	Requirement Description							
F461332-1	Network Control Orders							
F461332-2	Communication Function Information							

INPUT	F461333 - BUILD/TRANSMIT MESSAGE	OUTPUT								
<p>1) Transmitted Communication Messages 2) Transmitted User Messages 3) Transmitted Encrypted Message 4) Build Message Resources 5) System Configuration Criteria</p>	<p>Description: Perform the transmit functions for the IOS/OSI Reference model level protocols.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461333-1</td> <td>Protocol Applications</td> </tr> <tr> <td>F461333-2</td> <td>Internet Protocol</td> </tr> <tr> <td>F461333-3</td> <td>Network Protocol And Message Transmission</td> </tr> </tbody> </table>	#	Requirement Description	F461333-1	Protocol Applications	F461333-2	Internet Protocol	F461333-3	Network Protocol And Message Transmission	<p>1) Messages 2) Cleared Messages For Encryption 3) Messages For Authentication</p>
#	Requirement Description									
F461333-1	Protocol Applications									
F461333-2	Internet Protocol									
F461333-3	Network Protocol And Message Transmission									

INPUT	F461334 - RECEIVE/UNBUILD MESSAGE	OUTPUT								
1) Received Encrypted Messages 2) Unbuild Message Resources 3) System Configuration Criteria	<p>Description: Perform the received functions for the ISO/OSI Reference Model level protocols.</p> <table> <thead> <tr> <th data-bbox="425 1072 453 1453">#</th> <th data-bbox="425 1030 453 1368">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="486 925 514 1495">F461334-1</td> <td data-bbox="486 925 514 1474">Message Reception And Network Protocol</td> </tr> <tr> <td data-bbox="546 1199 574 1495">F461334-2</td> <td data-bbox="546 1199 574 1474">Internet Protocol</td> </tr> <tr> <td data-bbox="607 1157 634 1495">F461334-3</td> <td data-bbox="607 1157 634 1474">Application Protocol</td> </tr> </tbody> </table>	#	Requirement Description	F461334-1	Message Reception And Network Protocol	F461334-2	Internet Protocol	F461334-3	Application Protocol	1) Received Encrypted Message 2) Messages Received With Authentication
#	Requirement Description									
F461334-1	Message Reception And Network Protocol									
F461334-2	Internet Protocol									
F461334-3	Application Protocol									

INPUT	F46134 - PROVIDE ROUTING & CONGESTION CONTROL	OUTPUT												
<p>1) System Configuration Criteria 2) System Status Reports 3) Routing And Congestion Control Resources 4) Congested Links 5) Communication System Configuration</p>	<p>Description: This function provides the logical control to partition data, monitor data flow, control congestion, assign channels and provide alternate routing schemes.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F46134-1</td> <td>Communication System Partitioning Requirements</td> </tr> <tr> <td>F46134-2</td> <td>Traffic Flow Control</td> </tr> <tr> <td>F46134-3</td> <td>Traffic Congestion Control</td> </tr> <tr> <td>F46134-4</td> <td>Channel Assignments</td> </tr> <tr> <td>F46134-5</td> <td>Routing Table Updates</td> </tr> </tbody> </table>	#	Requirement Description	F46134-1	Communication System Partitioning Requirements	F46134-2	Traffic Flow Control	F46134-3	Traffic Congestion Control	F46134-4	Channel Assignments	F46134-5	Routing Table Updates	<p>1) Routing Tables</p>
#	Requirement Description													
F46134-1	Communication System Partitioning Requirements													
F46134-2	Traffic Flow Control													
F46134-3	Traffic Congestion Control													
F46134-4	Channel Assignments													
F46134-5	Routing Table Updates													

INPUT	F461341 - DETERMINE PARTITIONING REQUIREMENTS	OUTPUT								
<p>1) System Configuration Criteria 2) System Status Reports 3) Communication Partitioning Resources</p>	<p>Description: Determine how to partition the system so sensor data may be routed to the appropriate platforms.</p> <p>1) Valid Routes</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461341-1</td> <td>Network Configuration</td> </tr> <tr> <td>F461341-2</td> <td>Sensor Data Destinations</td> </tr> <tr> <td>F461341-3</td> <td>Network Connectivity</td> </tr> </tbody> </table>	#	Requirement Description	F461341-1	Network Configuration	F461341-2	Sensor Data Destinations	F461341-3	Network Connectivity	
#	Requirement Description									
F461341-1	Network Configuration									
F461341-2	Sensor Data Destinations									
F461341-3	Network Connectivity									

INPUT	F461342 - MONITOR FLOW CONTROL	OUTPUT								
<ul style="list-style-type: none"> 1) Congested Links 2) System Status Reports 3) Routing And Congestion Control Resources 	<p>Description: Continuously monitor the status of traffic flow throughout the system and determine whether it is within predefined bounds.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461342-1</td> <td>Network Traffic</td> </tr> <tr> <td>F461342-2</td> <td>Network Configuration</td> </tr> <tr> <td>F461342-3</td> <td>Flow Control Monitoring</td> </tr> </tbody> </table>	#	Requirement Description	F461342-1	Network Traffic	F461342-2	Network Configuration	F461342-3	Flow Control Monitoring	<ul style="list-style-type: none"> 1) Affected Channels/Links
#	Requirement Description									
F461342-1	Network Traffic									
F461342-2	Network Configuration									
F461342-3	Flow Control Monitoring									

INPUT	F461344 - ASSIGN CHANNELS	OUTPUT								
<ul style="list-style-type: none"> 1) System Configuration Criteria 2) Channel Changes 3) Channel Resources 	<p>Description: Assigns channels on a platform basis. May change assignments based on either fault detection or to relieve congestion.</p> <table border="1" data-bbox="453 1079 665 1522"> <thead> <tr> <th data-bbox="453 1079 486 1459">#</th> <th data-bbox="453 1459 665 1474">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="518 1241 551 1522">F461344-1</td> <td data-bbox="518 1241 551 1474">Valid Routes</td> </tr> <tr> <td data-bbox="584 931 616 1522">F461344-2</td> <td data-bbox="584 931 616 1474">Jamming And Nuclear Environment Threat</td> </tr> <tr> <td data-bbox="649 1199 682 1522">F461344-3</td> <td data-bbox="649 1199 682 1474">Message Priority</td> </tr> </tbody> </table>	#	Requirement Description	F461344-1	Valid Routes	F461344-2	Jamming And Nuclear Environment Threat	F461344-3	Message Priority	<ul style="list-style-type: none"> 1) New Routes
#	Requirement Description									
F461344-1	Valid Routes									
F461344-2	Jamming And Nuclear Environment Threat									
F461344-3	Message Priority									

INPUT	<p>F461345 - UPDATE ROUTING TABLES</p> <p>1) New Routes 2) Updating Resources</p> <p>Description: Updates the routing tables used to translate from logical addresses to physical links. Routing considers traffic capacity of each link, whether it is a primary or secondary link, geometries of space elements and fault conditions.</p>	<p>OUTPUT</p> <p>1) Routing Tables</p> <table border="1" data-bbox="465 1003 677 1467"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F461345-1</td><td>Network Configuration</td></tr> <tr> <td>F461345-2</td><td>Link/Node Status</td></tr> <tr> <td>F461345-3</td><td>Jamming And Nuclear Threat Environments</td></tr> </tbody> </table>	#	Requirement Description	F461345-1	Network Configuration	F461345-2	Link/Node Status	F461345-3	Jamming And Nuclear Threat Environments
#	Requirement Description									
F461345-1	Network Configuration									
F461345-2	Link/Node Status									
F461345-3	Jamming And Nuclear Threat Environments									

INPUT	F46135 - PROVIDE COMMUNICATIONSSECURITY	OUTPUT								
1) Messages For Security 2) OPSEC Guidance 3) Security Resources 4) System Configuration Criteria	<p>Description: This function provides the communications security features. Specific functions include cryptographic key storage and distribution, encryption/decryption, OPSEC procedures and authentication techniques for message validation.</p> <table> <thead> <tr> <th data-bbox="523 1030 548 1431">#</th><th data-bbox="523 994 548 1332">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="572 1364 597 1474">F46135-1</td><td data-bbox="572 984 597 1322">Message Information Collection</td></tr> <tr> <td data-bbox="621 1364 646 1474">F46135-2</td><td data-bbox="621 941 646 1322">Communications OPSEC Guidelines</td></tr> <tr> <td data-bbox="670 1364 695 1474">F46135-3</td><td data-bbox="670 1068 695 1322">Message Authentication</td></tr> </tbody> </table>	#	Requirement Description	F46135-1	Message Information Collection	F46135-2	Communications OPSEC Guidelines	F46135-3	Message Authentication	1) Communication Status Requests 2) Communications OPSEC Policies And Procedures
#	Requirement Description									
F46135-1	Message Information Collection									
F46135-2	Communications OPSEC Guidelines									
F46135-3	Message Authentication									

INPUT	<p>F461351 - PROVIDE CRYPTOGRAPHY</p> <p>Description: Performs end-to-end encryption/decryption and the key distribution functions</p> <ul style="list-style-type: none"> 1) Clear Messages For Encryption 2) Encrypted Messages Received 3) Cryptography Resources 4) System Configuration Criteria <table border="1" data-bbox="453 931 589 1396"> <thead> <tr> <th>#</th><th>Requirement Description</th></tr> </thead> <tbody> <tr> <td>F461351-1</td><td>Crypto Key Storage</td></tr> <tr> <td>F461351-2</td><td>Remote Crypto Key Change</td></tr> </tbody> </table>	#	Requirement Description	F461351-1	Crypto Key Storage	F461351-2	Remote Crypto Key Change	OUTPUT
#	Requirement Description							
F461351-1	Crypto Key Storage							
F461351-2	Remote Crypto Key Change							
		<p>1) Decrypted Received Messages 2) Transmitted Encrypted Messages</p>						

INPUT	F461352 - PROVIDE COMMUNICATION OPSEC GUIDELINES	OUTPUT						
<ul style="list-style-type: none"> 1) OPSEC Guidance 2) OPSEC Resources 3) System Configuration Criteria 	<p>Description: This function provides the OPSEC guidelines for conducting SDS operations.</p> <table border="1" data-bbox="437 988 600 1474"> <thead> <tr> <th data-bbox="437 988 470 1305">#</th><th data-bbox="437 988 600 1305">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="518 988 551 1305">F461352-1</td><td data-bbox="518 988 600 1305">OPSEC Guidelines Document</td></tr> <tr> <td data-bbox="567 988 600 1305">F461352-2</td><td data-bbox="567 988 600 1305">OPSEC Procedures</td></tr> </tbody> </table>	#	Requirement Description	F461352-1	OPSEC Guidelines Document	F461352-2	OPSEC Procedures	<p>1) Communications OPSEC Policies And Procedures</p>
#	Requirement Description							
F461352-1	OPSEC Guidelines Document							
F461352-2	OPSEC Procedures							

<p>INPUT</p> <ul style="list-style-type: none"> 1) Messages With Authentication 2) Messages For Authentication 3) Authentication Resources 4) System Configuration Criteria 	<p>F461353 - AUTHENTICATE MESSAGES</p> <p>Description: This function deals with all activities associated with the authentication of incoming and outgoing messages.</p> <table border="1"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F461353-1</td> <td>Authentication Scheme For Message Encoding</td> </tr> <tr> <td>F461353-2</td> <td>Authentication Scheme For Message Decoding</td> </tr> <tr> <td>F461353-3</td> <td>Link Spoofing Threat</td> </tr> </tbody> </table>	#	Requirement Description	F461353-1	Authentication Scheme For Message Encoding	F461353-2	Authentication Scheme For Message Decoding	F461353-3	Link Spoofing Threat	<p>OUTPUT</p> <p>1) Messages With Authentication Added 2) Authenticated Messages</p>
#	Requirement Description									
F461353-1	Authentication Scheme For Message Encoding									
F461353-2	Authentication Scheme For Message Decoding									
F461353-3	Link Spoofing Threat									

INPUT	OUTPUT						
<p>F4614 - OBTAIN AND DISSEMINATE SYSTEM OPERATIONAL STATUS DATA</p> <p>1) System configuration criteria 2) Distribution of assets 3) Activation and deactivation of reserve assets 4) Communications status</p>	<p>Description: This function encompasses the processes and means to obtain operational status data on SDS assets and to disseminate it to other SDS functions and to external parties. The function involves implementing routine asset status reporting, requesting and providing special asset status reports, providing event-triggered asset status reports, maintaining local and master system status databases, and providing tailored status reports for SDS functions.</p> <table> <thead> <tr> <th>#</th> <th><u>Requirement Description</u></th> </tr> </thead> <tbody> <tr> <td></td> <td>F4614-1 Management and operation resources</td> </tr> <tr> <td></td> <td>F4614-2 Host facilities and/or platforms</td> </tr> </tbody> </table> <p>1) System status data</p>	#	<u>Requirement Description</u>		F4614-1 Management and operation resources		F4614-2 Host facilities and/or platforms
#	<u>Requirement Description</u>						
	F4614-1 Management and operation resources						
	F4614-2 Host facilities and/or platforms						

INPUT	F462 - RECONSTITUTE SYSTEM	OUTPUT								
<ul style="list-style-type: none"> 1) Reconstitution priorities 2) Situation data 3) System configuration 4) System status data 5) Environment conditions 	<p>Description: This function encompasses the processes and means to reconstitute the SDS system following losses or exhaustion of assets. Reconstitution refers to the replacement of lost or exhausted assets (including human assets), as opposed to the reallocation of functions or responsibilities among remaining assets. The function includes determining the need for system reconstitution (versus just recovery), determining the availability of reconstitution resources, developing a reconstitution action plan, tasking reconstitution resources, and implementation of the taskings by those resources.</p> <table border="1" data-bbox="584 1051 763 1389"> <thead> <tr> <th data-bbox="584 1199 616 1389">#</th><th data-bbox="584 1051 616 1326">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="649 1051 682 1389">F462-1</td><td data-bbox="649 1051 682 1389">Management and operation resources</td></tr> <tr> <td data-bbox="682 1051 714 1389">F462-2</td><td data-bbox="682 1051 714 1389">Host facilities</td></tr> <tr> <td data-bbox="714 1051 763 1389">F462-3</td><td data-bbox="714 1051 763 1389">Reconstitution resources (personnel, equipment, and delivery capabilities)</td></tr> </tbody> </table>	#	Requirement Description	F462-1	Management and operation resources	F462-2	Host facilities	F462-3	Reconstitution resources (personnel, equipment, and delivery capabilities)	<ul style="list-style-type: none"> 1) Reconstituted capabilities
#	Requirement Description									
F462-1	Management and operation resources									
F462-2	Host facilities									
F462-3	Reconstitution resources (personnel, equipment, and delivery capabilities)									

INPUT	OUTPUT
<p>F4621 - DETERMINE NEED FOR SYSTEM RECONSTITUTION</p> <p>1) Reconstitution priorities 2) Situation data 3) System status data</p>	<p>Description: This function encompasses the processes and means to determine the need to reconstitute system assets. It involves review of situation and system status data, evaluation of continuing SDS mission demands, assessment of shortfalls expected to remain after system recovery operations, determination that reconstitution is necessary, and definition of specific needs and conditions in accordance with priorities for reconstitution.</p> <p>1) Specific reconstitution needs and conditions</p> <p># Requirement Description</p> <p>F4621-1 Management operation resources F4621-2 Host facilities</p>

INPUT	F4622 - DETERMINE AVAILABILITY OF RECONSTITUTION RESOURCES	OUTPUT
<p>1) Reconstitution priorities 2) Situation data</p> <p>Description: This function encompasses the processes and means to ascertain the existence, status, and other commitments against resources which could be used for or in support of SDS system reconstitution. The function involves monitoring system status data (to the extent that the system includes caches of reconstitution resources), conducting inquiries into the availability of external resources which could support SDS reconstitution, and compiling an inventory of relevant available resources</p>	<p>1) Inventory of resources available for or in support of SDS reconstitution</p> <p># <u>Requirement Description</u></p> <p>F4622-1 Management resources F4622-2 Host facilities</p>	

INPUT	F4623 - DEVELOP RECONSTITUTION ACTION PLAN	OUTPUT
<p>1) Reconstitution priorities 2) System status data 3) Specific reconstitution needs and conditions 4) Inventory of available reconstitution resources</p> <p>Description: This function encompasses the processes and means to formulate and refine a specific plan of action for meeting SDS reconstitution needs with available resources and in accordance with reconstitution priorities. The function involves formulation of the overall reconstitution approach, allocation of available resources to prioritized requirements, definition of tasks and their desired sequences, and detailed allocation of resources to tasks over time</p>	<p>1) Reconstitution action plan</p> <p># Requirement Description</p> <p>F4623-1 Management resources F4623-2 Planning and allocation tools F4623-3 Host facilities</p>	

INPUT	F4624 - TASK RECONSTITUTION RESOURCES	OUTPUT								
<p>1) Reconstitution action plan</p> <p>Description: This function encompasses the processes and means to task reconstitution resources to implement the reconstitution action plan. The function involves coordination with the parent organizations of the identified reconstitution resources to establish tasking channels or to transfer their operational control to the SDS, detailed assignment of resources to tasks of the reconstitution plan, and formal communication and acknowledgment of those taskings</p>	<p>1) Specific taskings to reconstitution resources</p> <table border="1" data-bbox="535 1009 768 1374"> <thead> <tr> <th data-bbox="535 1009 567 1332">#</th><th data-bbox="567 1009 600 1332">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="600 1009 633 1374">F4624-1</td><td data-bbox="633 1009 665 1374">Management resources</td></tr> <tr> <td data-bbox="665 1009 698 1374">F4624-2</td><td data-bbox="698 1009 731 1374">Host facilities</td></tr> <tr> <td data-bbox="731 1009 763 1374">F4624-3</td><td data-bbox="763 1009 796 1374">Communications with reconstitution resource parent organizations</td></tr> </tbody> </table>	#	Requirement Description	F4624-1	Management resources	F4624-2	Host facilities	F4624-3	Communications with reconstitution resource parent organizations	
#	Requirement Description									
F4624-1	Management resources									
F4624-2	Host facilities									
F4624-3	Communications with reconstitution resource parent organizations									

INPUT	F4625 - IMPLEMENT RECONSTITUTION TASKINGS	OUTPUT									
<p>1) Taskings of reconstitution resources</p> <p>Description: This function encompasses the processes and means employed by reconstitution resources to implement their respective reconstitution taskings. These include but are not limited to organization of work teams, requisition of tools and equipment, delivery and activation of reconstitution assets, and handover of assets to the SDS operational configuration management function.</p> <table border="1" data-bbox="523 1015 784 1417"> <thead> <tr> <th data-bbox="523 1015 556 1417">#</th><th data-bbox="556 1015 589 1417">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="589 1015 621 1417">F4625-1</td><td data-bbox="621 1015 638 1417">Skilled reconstitution personnel</td></tr> <tr> <td data-bbox="638 1015 670 1417">F4625-2</td><td data-bbox="670 1015 687 1417">Caches or other sources of tools and equipment</td></tr> <tr> <td data-bbox="687 1015 719 1417">F4625-3</td><td data-bbox="719 1015 736 1417">Reconstitution asset delivery means</td></tr> <tr> <td data-bbox="736 1015 768 1417">F4625-4</td><td data-bbox="768 1015 784 1417">Reconstitution asset activation means</td></tr> </tbody> </table>	#	Requirement Description	F4625-1	Skilled reconstitution personnel	F4625-2	Caches or other sources of tools and equipment	F4625-3	Reconstitution asset delivery means	F4625-4	Reconstitution asset activation means	<p>1) Reconstituted capabilities</p>
#	Requirement Description										
F4625-1	Skilled reconstitution personnel										
F4625-2	Caches or other sources of tools and equipment										
F4625-3	Reconstitution asset delivery means										
F4625-4	Reconstitution asset activation means										

INPUT	F463 - MAINTAIN AND SUPPORT SYSTEM	OUTPUT												
<ul style="list-style-type: none"> 1) Maintenance Support and Guidance 2) System Configuration 3) System Health and Status 4) Reconstituted capabilities 5) Environment conditions 6) Deployment and handover data and information 7) Higher Headquarters Approval 8) New and Reconstitution Resources 	<p>Description: This function encompasses the processes and means to maintain and support the SDS system, including equipment and personnel, in accordance with system configuration criteria and special system and equipment requirements. The function includes determining the system availability, performing maintenance, performing modifications, and supporting the system.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 10%;"><u>#</u></th> <th style="text-align: left;"><u>Requirement Description</u></th> </tr> </thead> <tbody> <tr> <td>F463-1</td> <td>Manage SDS Support Systems</td> </tr> <tr> <td>F463-2</td> <td>Maintain SDS Asset Status</td> </tr> <tr> <td>F463-3</td> <td>Operate SDS Support Systems</td> </tr> <tr> <td>F463-4</td> <td>Perform SDS Maintenance</td> </tr> <tr> <td>F463-5</td> <td>Provide SDS Integrated Logistics Support</td> </tr> </tbody> </table>	<u>#</u>	<u>Requirement Description</u>	F463-1	Manage SDS Support Systems	F463-2	Maintain SDS Asset Status	F463-3	Operate SDS Support Systems	F463-4	Perform SDS Maintenance	F463-5	Provide SDS Integrated Logistics Support	<ul style="list-style-type: none"> 1) Management and O&M resources 2) Retired equipment 3) Procurement Requirements
<u>#</u>	<u>Requirement Description</u>													
F463-1	Manage SDS Support Systems													
F463-2	Maintain SDS Asset Status													
F463-3	Operate SDS Support Systems													
F463-4	Perform SDS Maintenance													
F463-5	Provide SDS Integrated Logistics Support													

INPUT	F4631 - MANAGE SDS SUPPORT SYSTEMS	OUTPUT								
<ul style="list-style-type: none"> 1) Maintenance and Support Policies and guidance 2) Support System Schedules 3) System Asset Status 4) Management Resources 	<p>Description: This function deals with the management of SDS support systems. It includes the management of the overall SDS maintenance capability, the management of space transportation resources, to include scheduling of launches, and the management of logistics support.</p> <table border="1" data-bbox="518 967 719 1347"> <thead> <tr> <th data-bbox="518 967 551 1347">#</th><th data-bbox="551 967 567 1347"><u>Requirement Description</u></th></tr> </thead> <tbody> <tr> <td data-bbox="584 967 616 1347">F4631-1</td><td data-bbox="584 967 616 1347">Maintenance Capability Management</td></tr> <tr> <td data-bbox="633 967 665 1347">F4631-2</td><td data-bbox="633 967 665 1347">Space transportation Management</td></tr> <tr> <td data-bbox="682 967 714 1347">F4631-3</td><td data-bbox="682 967 714 1347">Logistic Management</td></tr> </tbody> </table>	#	<u>Requirement Description</u>	F4631-1	Maintenance Capability Management	F4631-2	Space transportation Management	F4631-3	Logistic Management	<ul style="list-style-type: none"> 1) Support Systems Procedures, Criteria, Directives, and Policy 2) Integrated Schedules
#	<u>Requirement Description</u>									
F4631-1	Maintenance Capability Management									
F4631-2	Space transportation Management									
F4631-3	Logistic Management									

INPUT	F4631 - MANAGE SDS SUPPORT SYSTEMS	OUTPUT								
<ul style="list-style-type: none"> 1) Maintenance and Support Policies and guidance 2) Support System Schedules 3) System Asset Status 4) Management Resources 	<p>Description: This function deals with the management of SDS support systems. It includes the management of the overall SDS maintenance capability, the management of space transportation resources, to include scheduling of launches, and the management of logistics support.</p> <table border="1" data-bbox="432 918 644 1298"> <thead> <tr> <th data-bbox="432 1087 465 1298">#</th><th data-bbox="465 918 497 1298">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="497 1087 530 1298">F4631-1</td><td data-bbox="530 918 563 1298">Maintenance Capability Management</td></tr> <tr> <td data-bbox="563 1087 595 1298">F4631-2</td><td data-bbox="595 918 628 1298">Space Transportation Management</td></tr> <tr> <td data-bbox="628 1087 660 1298">F4631-3</td><td data-bbox="660 918 693 1298">Logistics Management</td></tr> </tbody> </table>	#	Requirement Description	F4631-1	Maintenance Capability Management	F4631-2	Space Transportation Management	F4631-3	Logistics Management	<ul style="list-style-type: none"> 1) Support Systems Procedures, 2) Criteria, Directives, and Policy 2) Integrated Schedules
#	Requirement Description									
F4631-1	Maintenance Capability Management									
F4631-2	Space Transportation Management									
F4631-3	Logistics Management									

INPUT	F4632 - MAINTAIN SDS ASSET STATUS	OUTPUT								
<p>1) System Maintainability and Availability Criteria</p> <p>2) Operational System Asset Status</p> <p>3) Maintenance Resources</p>	<p>Description: This function deals with the maintenance of SDS assets and the determination of system operational status. It includes the task to maintain the system at a specified operational readiness level, the maintenance of a support system to provide personnel and material requirements needed to operate the system, and the logistic and planning capability to insure the system logistics support needs are planned, programmed and acquired.</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 10%;">#</th> <th style="text-align: center; width: 90%;">Requirement Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">F4632-1</td> <td>Maintain Operational Readiness</td> </tr> <tr> <td style="text-align: center;">F4632-2</td> <td>Support SDS Systems</td> </tr> <tr> <td style="text-align: center;">F4632-3</td> <td>Provide Logistics Planning</td> </tr> </tbody> </table>	#	Requirement Description	F4632-1	Maintain Operational Readiness	F4632-2	Support SDS Systems	F4632-3	Provide Logistics Planning	<p>1) Operational Asset Status</p>
#	Requirement Description									
F4632-1	Maintain Operational Readiness									
F4632-2	Support SDS Systems									
F4632-3	Provide Logistics Planning									

INPUT	F4633 - OPERATE SDS SUPPORT SYSTEMS	OUTPUT								
1) Maintenance and Support Criteria 2) Integrated Schedules 3) HA Approval to Conduct Space Transportation Operations 4) Support Operations Resources 5) Support System Health and Status	<p>Description: This function deals with the operations of the maintenance, Support and space transportation activities. It includes all those activities associated with the operation of a maintenance support function, those dealing with the acquisition and launch of space transportation systems, and the operation of an integrated logistic support function.</p> <table border="0" data-bbox="530 971 742 1351"> <thead> <tr> <th data-bbox="530 971 563 1351">#</th> <th data-bbox="563 971 579 1351">Requirement Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="595 971 628 1351">F4633-1</td> <td data-bbox="628 971 644 1351">Maintenance support</td> </tr> <tr> <td data-bbox="660 971 693 1351">F4633-2</td> <td data-bbox="693 971 709 1351">Space transportation Support</td> </tr> <tr> <td data-bbox="709 971 742 1351">F4633-3</td> <td data-bbox="742 971 758 1351">Integrated Logistic Support</td> </tr> </tbody> </table>	#	Requirement Description	F4633-1	Maintenance support	F4633-2	Space transportation Support	F4633-3	Integrated Logistic Support	1) System Status
#	Requirement Description									
F4633-1	Maintenance support									
F4633-2	Space transportation Support									
F4633-3	Integrated Logistic Support									

INPUT	OUTPUT
<p>F4634 - PERFORM SDS MAINTENANCE</p> <p>Description: This function encompasses those activities dealing with the performance of maintenance, corrective actions, system upgrades P3I and deferred enhancements and the performance of routine services and maintenance of the system. This function also includes the reconfiguration of SDS assets.</p>	<p>1) Maintenance Status 2) Health and Status Data 3) Expended Asset Reports 4) Retired Maintenance Assets</p>

INPUT	F4635 - PROVIDE INTEGRATED LOGISTIC SUPPORT	OUTPUT										
<p>1) Logistics requirements and support schedules</p> <p>2) Reconstituted capabilities</p> <p>3) Deployment handover data and information</p> <p>4) Logistics requirements</p> <p>5) Integrated schedules</p> <p>6) New resources</p>	<p>Description: This function encompasses those activities dealing with the performance of integrated logistics support, planning and resource acquisitions. It includes the development and maintenance of the plans and programs dealing with the logistic support and planning for the SDS. i.e. SEMP, ILSP, PMP, etc.</p> <table border="0" data-bbox="465 925 719 1298"> <thead> <tr> <th data-bbox="465 925 497 1298">#</th><th data-bbox="497 925 719 1298">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="530 982 563 1298">F4635-1</td><td data-bbox="563 982 719 1298">Plans and Programs</td></tr> <tr> <td data-bbox="595 960 628 1298">F4635-2</td><td data-bbox="628 960 719 1298">Policies and Directives</td></tr> <tr> <td data-bbox="660 939 693 1298">F4635-3</td><td data-bbox="693 939 719 1298">Reviews and Schedules</td></tr> <tr> <td data-bbox="726 1066 758 1298">F4635-4</td><td data-bbox="758 1066 719 1298">Requests</td></tr> </tbody> </table>	#	Requirement Description	F4635-1	Plans and Programs	F4635-2	Policies and Directives	F4635-3	Reviews and Schedules	F4635-4	Requests	<p>1) Procurement requirements</p> <p>2) Logistics resource status</p> <p>3) O&M maintenance resources</p> <p>4) Retired equipment</p>
#	Requirement Description											
F4635-1	Plans and Programs											
F4635-2	Policies and Directives											
F4635-3	Reviews and Schedules											
F4635-4	Requests											

INPUT	F464 - PROVIDE LAUNCH ASSETS	OUTPUT												
<ul style="list-style-type: none"> 1) Operational requirements 2) Range safety requirements 3) Launch needs 4) Launch components, facilities & support equipment <p>Description: This function encompasses all those activities associated with the launch of SDS space resources. It covers support as well as operational launches of SDS assets. This function deals with the determination of launch requirements, the requestioin of assets, the arrangement for ground and space transportation vehicles and other activities associated with space launches.</p>	<p>1) Launch reports and asset status</p> <p>2) Failed components</p>	<table border="1" data-bbox="535 868 833 1305"> <thead> <tr> <th data-bbox="535 868 567 1305">#</th><th data-bbox="535 868 567 1305">Requirement Description</th></tr> </thead> <tbody> <tr> <td data-bbox="572 931 605 1305">F464-1</td><td data-bbox="572 931 605 1305">Launch Requirements</td></tr> <tr> <td data-bbox="610 889 643 1305">F464-2</td><td data-bbox="610 889 643 1305">Inspection and Receiving</td></tr> <tr> <td data-bbox="654 1058 687 1305">F464-3</td><td data-bbox="654 1058 687 1305">Integration</td></tr> <tr> <td data-bbox="691 1079 724 1305">F464-4</td><td data-bbox="691 1079 724 1305">Launch</td></tr> <tr> <td data-bbox="729 1142 762 1305">F464-5</td><td data-bbox="729 1142 762 1305">Refurbishment</td></tr> </tbody> </table>	#	Requirement Description	F464-1	Launch Requirements	F464-2	Inspection and Receiving	F464-3	Integration	F464-4	Launch	F464-5	Refurbishment
#	Requirement Description													
F464-1	Launch Requirements													
F464-2	Inspection and Receiving													
F464-3	Integration													
F464-4	Launch													
F464-5	Refurbishment													

INPUT	F4641 - DETERMINE LAUNCH REQUIREMENTS	OUTPUT								
<ul style="list-style-type: none"> 1) Special launch directives 2) Standard policy and procedures 3) Launch needs 4) Operational requirements 5) Launch planning resources 	<p>Description: This function covers those activities dealing with the determination of launch requirements and those actions to implement those requirements. It covers planning, scheduling and the monitoring of all launch activities both operational and support.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4641-1</td> <td>Requirements Planning</td> </tr> <tr> <td>F4641-2</td> <td>Scheduling</td> </tr> <tr> <td>F4641-3</td> <td>Resource Planning</td> </tr> </tbody> </table>	#	Requirement Description	F4641-1	Requirements Planning	F4641-2	Scheduling	F4641-3	Resource Planning	<ul style="list-style-type: none"> 1) Required launch configuration and schedules
#	Requirement Description									
F4641-1	Requirements Planning									
F4641-2	Scheduling									
F4641-3	Resource Planning									

INPUT	F4642 - RECEIVE AND INSPECT LAUNCH COMPONENTS	OUTPUT
<p>1) Required launch configuration and Launch schedules 2) Launch components and equipment</p>	<p>Description: This function deals with the arrangement for transportation of assets from supply points or from depots to the launch facility complex, the receipt for and the inspection of received components, and the determination if these components meet system specifications prior to delivery to the integration facility.</p>	<p>1) Component inspection/test results 2) Accepted launch components 3) Failed components</p>

#	Requirement Description
F4642-1	Transportation
F4642-2	Inspection
F4642-3	Repair
F4642-4	Security
F4642-5	Test and Evaluation

INPUT	F4643 - INTEGRATE PAYLOAD AND LAUNCH VEHICLE	OUTPUT										
<ul style="list-style-type: none"> 1) Required launch configuration and schedules 2) Component inspection/test results 3) Accepted launch components 4) Integration resources 	<p>Description: This function encompasses those activities dealing with the acceptance of the space asset and launch vehicle from the receive and inspection facility, to the test and evaluation of the individual components, through the integration of the different components into a single payload, to their final step of integrating the payload into the launch vehicle.</p> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4643-1</td> <td>Integration of assets and components</td> </tr> <tr> <td>F4643-2</td> <td>Test and Evaluation</td> </tr> <tr> <td>F4643-3</td> <td>Support facilities and equipment</td> </tr> <tr> <td>F4643-4</td> <td>Transportation</td> </tr> </tbody> </table>	#	Requirement Description	F4643-1	Integration of assets and components	F4643-2	Test and Evaluation	F4643-3	Support facilities and equipment	F4643-4	Transportation	<ul style="list-style-type: none"> 1) Vehicle specifications 2) Integrated launch vehicle
#	Requirement Description											
F4643-1	Integration of assets and components											
F4643-2	Test and Evaluation											
F4643-3	Support facilities and equipment											
F4643-4	Transportation											

INPUT	F4644 - CONDUCT LAUNCH OPERATIONS	OUTPUT										
<p>1) Range safety requirements and operational requirements 2) Required launch configuration and schedules 3) Vehicle specifications 4) Integrated launch vehicle 5) Launch resources</p>	<p>Description: This function deals with those activities commencing with the completion of the payload and launch vehicle mating through the final on-orbit checkout of the launched asset to the turn over of the asset to the SDS-OC.</p> <table> <thead> <tr> <th>#</th> <th>Requirement Description</th> </tr> </thead> <tbody> <tr> <td>F4644-1</td> <td>Launch Facilities</td> </tr> <tr> <td>F4644-2</td> <td>Launch Control</td> </tr> <tr> <td>F4644-3</td> <td>Ground Control</td> </tr> <tr> <td>F4644-4</td> <td>Ground Support Equipment</td> </tr> </tbody> </table>	#	Requirement Description	F4644-1	Launch Facilities	F4644-2	Launch Control	F4644-3	Ground Control	F4644-4	Ground Support Equipment	<p>1) Status and reports 2) Launched assets</p>
#	Requirement Description											
F4644-1	Launch Facilities											
F4644-2	Launch Control											
F4644-3	Ground Control											
F4644-4	Ground Support Equipment											

INPUT	F4645 - REFURBISH PAD AND VEHICLE	OUTPUT
<ul style="list-style-type: none"> 1) Range safety requirements and operational requirements 2) Status and reports 3) Refurbishment resources 	<p>Description: This function encompasses those activities dealing with the refurbishment of the launch pad and facilities prior to the next scheduled launch to include the integration of the next launch vehicle onto the launch pad/complex.</p>	<ul style="list-style-type: none"> 1) Refurbishment reports

#	Requirement Description
F4645-1	Repair and Replacement
F4645-2	Launch Vehicle Integration
F4645-3	Test and Evaluation